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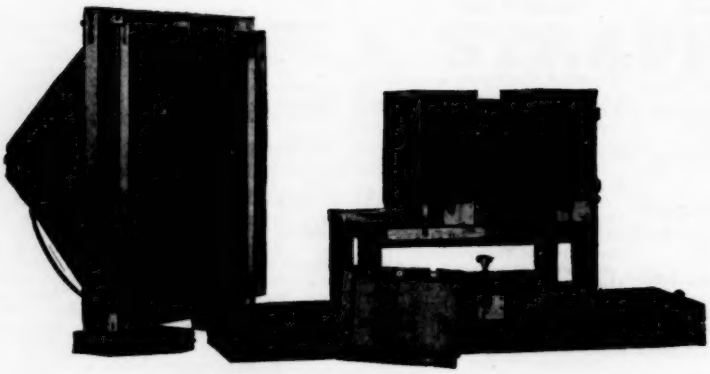

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ADDRESSES AND ORIGINAL ARTICLES

THE REACTIONS OF THE EYE TO GENERAL DISEASE *

By F. A. Williamson-Noble, M.B. Camb., F.R.C.S. Eng.

ASSISTANT OPHTHALMIC SURGEON TO ST. MARY'S HOSPITAL, AND TO THE NATIONAL HOSPITAL, QUEEN-SQUARE; ASSISTANT SURGEON TO THE CENTRAL LONDON OPHTHALMIC HOSPITAL

It has often seemed to me that the eye affords opportunities for the study of disease which are given by no other part of the body. Thanks to the slit-lamp and corneal microscope, its anterior layers, as far back as the front portion of the vitreous, are accessible to observation under a magnification as high as 40 diameters, while the fundus of the eye is seen, with the ordinary ophthalmoscope by the direct method, under a magnification of 14 diameters owing to the lens system employed by Nature.

The eye seems to constitute a pathological laboratory with a clear window through which we can watch the changes in health and disease undergone by living tissue in its natural surroundings. When we remember that the optic nerve and retina are morphologically portions of the brain, the importance of the ophthalmoscope becomes still more evident, since we have actually exposed to our view a portion of the forebrain which can be examined during life with the utmost ease under a magnification of 14 diameters.

What are the changes, then, that are thus revealed to us in various diseases? There are two ways of answering this question. One is to take the structures of the eye seriatim and enumerate what happens when they are attacked by disease, and the other is to take each disease separately and describe what happens when it attacks the various parts of the eye. The former method seems to me to savour too much of the text-book, while the latter would entail much repetition, so I trust you will allow me to take the middle course as being the more useful. I have no wish to make my remarks encyclopædic and would prefer to be eclectic, picking out from the mass of accumulated data of medical ophthalmology those features which I think are of interest.

Measles

To take, first of all, a very ordinary disease: measles. It is a commonplace of medicine that the eyes require considerable care during the course of this malady, owing to the constant occurrence of conjunctivitis in varying grades of severity, possibly with corneal ulcers as a complication. It is not probably realised, however, what an intimate relationship this disease has to the onset of convergent squint in children. The number of cases of squint which date from an attack of measles is really quite large, and the reason for it is probably as follows.

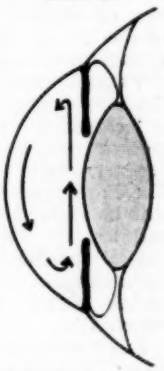
Non-paralytic convergent squint unassociated with disease of the retina or optic nerve is due in the ultimate analysis to failure of the fusion centre to correlate the movements of the two eyes. Most of these cases occur in hypermetropes and, if the hypermetropia is not corrected with glasses, clear vision can be obtained only by accommodation. The synergic action of convergence tends to occur at the same time and, if the fusion power be weak, little or no diplopia is caused and one eye becomes turned in. Binocular vision is a relatively late phylogenetic acquisition and is therefore a function which is easily upset. An analogy with this is to be found in the action of anæsthetics on the central nervous system, in which the highest centres are those to be first affected. An even closer analogy is perhaps to be found in the action of alcohol, over-indulgence in which is traditionally supposed to bring about diplopia and in extreme cases even polyopia. Be this as it may, the toxin of measles seems in a fair number of cases to have some peculiar selective action on the fusion centre in the brain, and to bring about concomitant convergent squint, apart entirely from anything in the way of encephalitis.

Another sequel of measles, though an uncommon one, is a degenerative change in the macular region of the retina which brings about marked diminution of visual acuity. Here again the phylogenetic theory may come in, since macular vision is a relatively late acquisition.

Reactions of the Iris and Ciliary Body

After this introductory digression, I should like to become a little more systematic and describe some of the reactions of the iris and ciliary body to general disease. These parts must be considered together, as they are structurally continuous with one another. Iritis can be caused by various types of blood-borne infection, the commonest agents being the spirochæte, the gonococcus, and the various forms of streptococci associated with focal infections of the teeth, tonsils, alimentary or genito-urinary tracts, and sinuses. In my experience the first sign of involvement of the iris and ciliary body in an inflammatory process is slight opacity in the aqueous and the occurrence of fine precipitates on the back of the cornea.

FIG. 1.



Circulation of the aqueous in the anterior chamber.

Everyone is familiar with the effect of a beam of sunlight passing through a partially darkened room: how it shows up all the motes of dust which are otherwise invisible in the air. The same principle can be applied to examination of the anterior chamber. By means of the slit-lamp, a narrow pencil of rays can be directed obliquely through the aqueous and its path can be observed by a binocular microscope placed opposite the eye. In normal circumstances the aqueous is "optically empty": the fluid contains no particles and so the path of the ray of light is invisible. If there is the slightest turbidity, however, the beam becomes visible, and this so-called aqueous flare is one of the earliest and most reliable signs of inflammation of the iris and ciliary body. Close examination reveals a very interesting movement of the particles. The cornea is in contact with the air, and is therefore cooler than the iris. Hence the fluid in contact with the posterior surface of this membrane is cooler than that in contact with the iris. A thermo-syphon effect results, analogous with the cooling methods employed in some motor-cars, so that the aqueous is kept in constant movement and the particles in the anterior part of the aqueous are seen to be descending, while those in the posterior part, near the iris, are ascending. Fig. 1 shows the direction of the currents.

* The first Lettsomian lecture for 1932, delivered before the Medical Society of London on Feb. 29th. The second and third lectures will be published in coming issues.

Clinically, circumcorneal flush is an extremely valuable sign, even though unattended by pain or any definite obscuration of vision. Experience with the slit-lamp has taught me that, in the absence of glaucoma or some inflammatory affection of the cornea, injection of the conjunctiva in the region of the corneal margin means iritis or iridocyclitis, even if nothing can be seen by the ordinary methods of examination. If effective treatment can be instituted at this early stage, there may be complete recovery without any of the usual sequelæ of iritis, such as adhesions of the iris to the lens, spots of pigment on the posterior surface of the cornea, opacities in the vitreous, and membranes on the front of the lens.

CHARACTERISTICS OF IRITIS

Whether the primary cause of iritis is bacteria or their toxins is still a matter of dispute, to which I shall refer again later; the immediate question is the structural changes occurring as a result of the arrival by the blood stream of micro-organisms or their products. The first change is, of course, engorgement of the blood-vessels with œdema of the tissue, and the second the occurrence of cellular infiltration and the formation of exudate. The former is not apparent in the iris itself in the earlier stages of the disease, but is shown indirectly by the circumcorneal flush and by the contraction of the pupil brought about by swelling of the iris, though this is possibly aided by reflex spasm of the sphincter. Exudate is visible in the very early stages only when the slit-lamp is used, but later is manifested as a more obvious haze in the aqueous, often accompanied by a collection of inflammatory products at the bottom of the anterior chamber and on the back of the cornea. The formation of exudate is also responsible for the adhesions of the iris to the underlying lens and the formation of membranes over the front and back of this structure.

Various modifications may occur: one, particularly important clinically, in cases of syphilis, is localisation of the infection to a relatively small area of the ciliary body with subsequent gummatous degeneration of this organ and of the overlying sclera. The importance of the condition is twofold. First, if it be allowed to progress, the sclera will perforate and the eye be lost. Secondly, the only obvious clinical manifestation may be the occurrence of an elevated pinkish-red area on the sclera adjacent to the limbus, similar to the benign condition known as episcleritis.

I well remember a case of this type I had at hospital once:

A man came up with a small reddish-pink area on the sclera, at about "12 o'clock." It looked like episcleritis, but slit-lamp examination showed the presence of a few fine particles in the aqueous, though there was no clinical evidence of iritis. I therefore had a Wassermann test done; it was strongly positive and the swelling rapidly resolved under antisyphilitic treatment. When the iris is attacked by the toxins or organisms of gonorrhœa or of focal infection the course is usually more acute.

It is now generally agreed that the aqueous is formed by a process of dialysation from the blood. The capillary vessel wall forms a semi-permeable membrane which allows the smaller crystalloid molecules to pass through but not the large protein ones, the osmotic pressure of the proteins of the blood being thus in large measure responsible for the maintenance of intra-ocular pressure. In the acute types of iritic infection, the aqueous has a high protein content and is almost gelatinous in consistence. This is shown particularly well on slit-lamp examination by an absence of the circulatory movement in the particles. In some cases, particularly gonococcal, the gelatinisation of the fluid is so marked that it makes it look as though the lens were dislocated into the anterior chamber, and there have been cases when this mistake in diagnosis has been made. It is tempting to assume that in these cases some damage is done to the endothelial lining of the capillaries by the gonococcal toxin, so that the protein molecules can pass through.

It is interesting to note the long latency of the gonococcus. The attack usually occurs at the time of the arthritis and often not for years after the initial urethral infection. This may be because it takes a long time for the infection to become generalised, but it also seems as though there were some anaphylactic element whereby the iris becomes sensitised to the actions of the toxin. Relapses are frequent, but they usually occur in the same eye, and if a cure is to be effected by vaccines they must be administered for a very long period. A case I had some little time ago illustrated this sensitiveness of the iris rather well.

He was a man aged 50, and prolonged vaccine treatment, combined with iridectomy, had sufficed to rid him of his trouble. A year or so later he returned with a tremendous attack of acute iritis which had come on after prostatic massage at one of the genito-urinary hospitals. Nothing violent had been done, but presumably a few gonococci or their toxins had been forced into the blood stream and the sensitised iris had immediately reacted. The prostate was then removed, and no further attacks occurred. This treatment is possibly a little heroic for gonococcal iritis, but it was certainly effective.

Focal Infection

The type of iritis produced by focal infection usually bears a close resemblance to that caused by the gonococcus. It is subject to relapses, may remain unilateral for a long time, and usually results in the formation of narrow adhesions between the iris and lens, in distinction to the syphilitic type of iritis which is commonly bilateral and causes broad adhesions. These cases of iridocyclitis due to focal infection are at times extremely difficult to diagnose. The fall into three groups:—

1. The acute type, with a reaction resembling that seen in the gonococcal cases, though the aqueous is not usually so gelatinous.
2. The chronic type with subacute remissions.

Such a case is an aged lady who comes to see me periodically and has been under the care of three generations of ophthalmic surgeons. I am not discussing treatment, or I might tell you of all the things that have been done to her. Suffice it to say that, in spite of many and varied kinds of treatment, she still has attacks of mild cyclitis at intervals of a few months, in which the eye becomes a little flushed and a few fresh spots of precipitate form on the back of the cornea. In spite of this, on her good days, she still has 6/9 vision in one eye, the other eye having developed cataract and a dislocated lens after iridectomy performed many years ago.

3. The really chronic type. In this, there is usually no injection of the circumcorneal region of the conjunctiva, but examination of the eye reveals the presence of small dots of precipitate on the back of the cornea. The iris is usually discoloured owing to absorption of pigment by the phagocytic cells constantly present in its stroma, and the lens becomes slowly opaque from defective nourishment, owing to toxicity of the aqueous.

An interesting feature in many of these cases is paralysis of the sympathetic on the affected side. This is shown by the pupils being approximately equal in bright light but markedly unequal in light of reduced intensity, the pupil on the affected side being the smaller, owing to paralysis of the dilator fibres of the iris. The inequality is made still more manifest by the instillation of cocaine. It is a nice point, and one which has not yet been decided, whether

the sympathetic paralysis is the primary cause of the cyclitis. If there are such things as trophic fibres, and if their course to the eye is via the sympathetic nerves, then interference with these nerves will reduce the resistance of the iris and render it more liable to bacterial invasion.

The whole question of the relation of focal infection to eye disease is to my mind still in the melting-pot. In England and America many ophthalmologists are apt to explain otherwise obscure cases of chronic intra-ocular inflammation as due to the action of metastatic septic foci, and in a fair number of cases they are undoubtedly right, while on the Continent, and particularly in Germany, these lesions are far more commonly ascribed to the action of the tubercle bacillus. One recent writer on ophthalmic pathology [1] has put the matter rather nicely by saying that "an uninitiated reader of the literature might easily be led to suppose that in Germany, and elsewhere on the Continent, tuberculosis is quite a different disease from that which we find in this country, while on the other hand the teeth and tonsils of the British and American people were in some obscure way stimulated to most malicious behaviour." The truth must, of course, lie between these two assertions, though Wright and his co-workers have recently been doing some interesting work on tuberculin. This was the subject of a paper read before this society, so I need not go into the details beyond saying that the experiments showed how increased immunity to organisms such as the staphylococcus could be brought about by the administration of tuberculin. One is not therefore justified in saying that a case of iridocyclitis or choroiditis is tuberculous because the condition improves with tuberculin treatment.

ENDOCRINE FACTORS

Another factor to be considered is the endocrine system. Let me give an illustrative case before discussing the matter further.

A woman, aged 59, was sent to see me from the country with a history that the right eye had become blurred and bloodshot a month previously. Vision of this eye with glasses was only 6/18, while that of the left eye was 6/6 partly. The tension of each eye was raised well above the normal figure of 15–25 mm. Hg, that of the right being no less than 60 and of the left 47 mm. Hg. There was evidence of slight inflammatory change, in the shape of a few dots of precipitate on the back of the right cornea. No evidence of focal sepsis was forthcoming, beyond the presence of a crowned tooth which was removed without affecting the eye condition. It became evident that if nothing were done, the sight, at any rate of the right eye, would be lost. Miotics were ineffective, so I performed an iridectomy, with the double intention of warding off iritis and of reducing the intra-ocular pressure to normal. Recovery in the right eye was uneventful, and 6/6 vision with glasses was attained, but during her stay in the nursing home the patient complained of hæmorrhoids. I thought that this condition was at the wrong end of the body for me, so asked a very able general practitioner of my acquaintance to come in and see her. He prescribed the necessary ointments with satisfactory result but, more important still, told me that the patient looked as though she were suffering from hypothyroidism, and asked if I would agree to putting her on thyroid extract. I did so, with the result that the tension in the unoperated eye gradually came down to normal, vision with glasses came up to 6/6, and the one or two small spots of exudate on the back of the cornea slowly absorbed.

It seems to me, therefore, that in chronic iritis and cyclitis many factors may be involved. First there are the actual causative organisms. The crux of the matter, to my mind, hangs on the word "causative." In other words, why do these organisms cause the iritis? Most of us probably have, somewhere in our bodies, hidden foci of infection, and we do not develop iritis. I possess, for example, a couple of crowned teeth, and I believe my tonsils are not above suspicion, but so far they have not occasioned me any inconvenience. It seems conceivable, however, that if the thyroid mechanism were to break down under the continued onslaught of chronic sepsis, as in McCarrison's fishes, or from some other cause, a vicious circle might be established and various forms of inflammatory change become manifest. We are not right, therefore, in always attributing the occurrence of these cases solely to micro-organisms. In the case I was mentioning there seems little doubt that thyroid insufficiency was also a cause, and that the simple fact of giving thyroid extract was enough to put the patient right.

ANAPHYLAXIS

Another point of view is the anaphylactic one—I can perhaps best explain what I mean by analogy.

I remember, when a student in the dermatological department at St. Mary's Hospital, seeing a man with a violent eczematous sort of condition of his forearm. He gave a history of having worked in sandal-wood for many years—I think it was about 20. He had never had any trouble until recently, but now the slightest trace of sandal-wood oil was sufficient to cause him dermatitis and he wanted to know what to do about it.

A similar condition is always cropping up in eye work—namely, atropine irritation. A patient may use atropine for weeks in the treatment of a chronic iritis and then, suddenly, the lids and adjacent skin of the face will become swollen and red, so much so that I have known the condition to be diagnosed as erysipelas. It entirely subsides on withdrawing the atropine, but reappears if the drug is instilled into the eyes again. It seems likely that the iris may become similarly sensitised to the action of certain bacteria or toxins, so that a patient with irides of this type would produce an inflammatory reaction with a very much smaller dose of organisms than one whose irides were normal. It is for this reason that I always like to use small doses of vaccine rather than large ones, at any rate in the early stages, because it seems to me that what we have to do is to desensitise the patient before we can hope to start on immunising him. A similar reasoning has been applied by some, notably Derby and Walker, Iggersheimer, Schoenberg and Wesseley, to the ætiology of interstitial keratitis.

The cornea illustrates the effect of the anaphylactic factor rather well. The last named of the above observers [2] injected one or two drops of inactive beef or horse serum into the tissue of the cornea. There was a little reaction, which all passed off in a few hours. Some eyes showed no further change, but in others, after 12 to 14 days, there was some injection followed by a progressive opacity in the deeper layers of the cornea, sometimes with vascularisation. If at this time a small quantity of serum were introduced into the cornea of the other eye, the characteristic interstitial inflammation developed within 24 hours instead of within 12 to 14 days. A variation of the experiment was to give 4 c.cm. of serum intravenously at the end of 14 days. If the injected eye had not already developed interstitial keratitis, it did so within 24 hours, and if it had previously developed keratitis, the inflammation became more severe.

These experiments have been applied to the elucidation of human interstitial keratitis in the following manner. It has been proved, histologically, that spirochætes can wander into the cornea in congenital syphilis without producing any notable reaction. Their presence, however, or the presence of their toxin, may be enough to sensitise the cornea. If now, at some period of the child's life, the general resistance becomes lowered—through, say, one of the exanthems—the spirochætes latent in some part of

the body may again become active and the eye, previously sensitised, will speedily react.

The same effect may follow local trauma to the eye, and many cases of interstitial keratitis date the onset of this disease from some minor injury to the cornea such as that produced by the entry of a foreign body. Such cases are very difficult when the question of compensation arises. No definite opinion seems to have been expressed yet as to whether interstitial keratitis following a blow or injury to the eye can be regarded as attributable to this or not.

The anaphylactic theory also helps to explain the resistance of the disease to treatment. On the whole, a case treated with antisyphilitic remedies runs a more benign course than one which is not so treated, but on the other hand, it is not very uncommon for interstitial keratitis to break out in the unaffected eye while the patient is actually under general treatment for syphilis. If only a small quantity of antigen is required to provoke the anaphylactic reaction, such a course of events can be easily understood.

ELECTIVE LOCALISATION

Another point bearing on this aspect of the ætiology is the work of Rosenow on the elective localisation of bacteria. The theory is that organisms become accustomed to certain conditions for growth and do not grow except under these conditions. Oxygen tension is an important and variable factor, and it is thought that organisms will attack another part of the body if they can find there the same oxygen tension as obtained in the original focus. The most striking confirmation of this theory of elective localisation has been provided by Benedict. He grew streptococci from the teeth of five patients suffering from acute iritis, due presumably to dental infection, and injected them intravenously into rabbits, with the result that material from four of the patients produced iritis. On the other hand, streptococci grown from the teeth of nine patients suffering from chronic iritis failed to produce any ocular lesions on intravenous injection into rabbits. I am not a bacteriologist, and so am not in a position to say what it is that makes the microbes do this—whether they become, so to speak, habituated to certain conditions in the teeth which are also present in the eye so that they can migrate there and continue to live, or whether a new strain which has this property is implanted on the old ones. The reaction seems to be a fairly delicate one, however, and to occur only at certain stages of virulence. Thus Rosenow,[3] on passaging a strain of pneumococci through rabbits, found that at the eighteenth passage they produced suppurative conjunctivitis, at the nineteenth iritis, and at the twentieth marked conjunctival and scleral hæmorrhages, while subsequent passages failed to produce eye lesions. A similar result was obtained with another strain at the tenth and fourteenth passages, and the same kind of thing occurred with *B. coli* and with staphylococci. The injections were made intravenously, and an interesting feature was the association of lesions in other parts, such as the appendix, joints, stomach, pericardium, and kidneys, with the injections which affected the eyes. Perdreau has found a similar phenomenon with herpes virus in the production of encephalitis by passaging.

From the ætiological standpoint, it is perhaps worth while to have some figures bearing on the relative frequency of the various causes of iritis. Numerous tables of this kind have been published, one of the earliest being by Arlt, as long ago as 1853. The latest, and probably the most reliable, is that by S. R. Gifford.[4] His total number of cases was 118, and of these 22 per cent. were of tonsillar and 16·9 per cent. of syphilitic origin, 12·7 per cent. were due to infected teeth, 8·5 per cent. to combined infections, 6·8 per cent. to sinusitis, and 6·8 per cent. to gonorrhœa. Of these 5·1 per cent. were attributed to prostatic infection, 1·7 per cent. to pelvic infection in women. A further 1·7 per cent. were diabetic, while in 16·1 per cent. no cause was found.

This division agrees fairly well with my own impression of the causes of iritis, though possibly the tonsillar figure is rather higher than one would expect. Gifford's figures were, however, very carefully compiled, and in cases where more than one possible cause was present, the one mentioned as the ætiological factor was that of which the removal was followed by complete relief of symptoms.

Syphilis

Syphilis and tuberculosis are two fairly common diseases, and I should like to say a little more about the reactions to them of the iris and ciliary body. From a purely ophthalmic standpoint, one would say that iritis is a fairly common complication of syphilis, but on going into the figures it appears that only from 0·42 to 5·37 per cent. of syphilitics acquire iritis during the course of the disease, though probably double this number have involvement of some part of the eye, since Groenow found that among 2000 patients with syphilitic ocular disorders 45 per cent. had iritis.

The iris may be involved in the course of the disease or possibly as the result of faulty treatment. If, for example, in a case of well-established untreated syphilis, arsenicals are vigorously used in the early stages, a large number of spirochætes are killed, their toxins are liberated, and a Herxheimer reaction is produced which may involve the iris. I remember this happening to a patient of mine at hospital who had quite a mild syphilitic iritis. He was sent to the venereal disease department of another hospital, where he was given a full dose of novarsenobillon, with the result that the iritis became much more violent, though it eventually quietened down under continued treatment. On the other hand, if efficient treatment is begun early but is not continued for a long enough period, the iris is very liable to a *rezidiv* reaction, since it and the uveal tract, in common with the central nervous system, are slow to develop natural immunity. If, therefore, the normal inflammatory response has been aborted by the early use of antisyphilitic remedies, the few spirochætes that remain after treatment has ceased will find, so to speak, a virgin soil and grow apace, with the production of severe iritis. It is worthy of note in this connexion that spinal fluid findings indicate a higher percentage of neurosyphilis in patients with iritis than in those without it.

From the diagnostic standpoint, it is unfortunate that the reaction of the iris to syphilis is not always the same, and quite frequently it is impossible to distinguish an iritis due to this cause from an iritis due to one of the many others. It may be comforting, however, especially to those whose field of action is not limited by the bony margin of the orbit, to know that nearly all the cases of early iritis in a recent survey [5] have had other recognisable signs of secondary syphilis, though sometimes these had to be looked for carefully.

Typical syphilitic iritis does, however, occur and so merits a short description. It is characterised chiefly by the appearance of one or more nodules at the pupil margin or at the periphery of the iris which vary in size from that of a hemp seed to a small pea

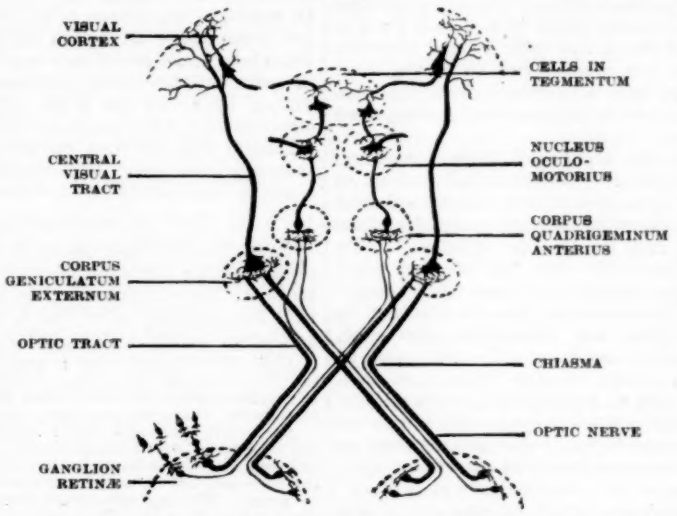
and in colour from yellowish to reddish-brown. The intervening iris is comparatively unaffected. These nodules are not gummata and soon clear up under treatment, but the latter may develop in the tertiary stage of the disease in the same way as they do in the ciliary body. They are then considerably larger, are solitary and, when they break down, leave an area of atrophy in the iris.

Late syphilitic iritis is not so easy to diagnose, since it is, of course, obvious that syphilitic patients may easily develop iritis from other causes, and Zimmermann [6] estimates that in 6·7 per cent. of patients with supposed syphilitic iritis and a positive Wassermann reaction the ætiological factor is one other than syphilis. Also it is not uncommon in late syphilitic iritis, as in other late manifestations of this disease, to find that the Wassermann reaction is negative. In a recent survey [5] the Wassermann reaction was positive in 97 per cent. of cases of early iritis, and 55 per cent. of recurrence cases, 81 per cent. of which had late syphilitic iritis. The therapeutic test ought to be reliable, but even this is open to fallacies for two reasons :—

1. Late syphilitic lesions, particularly if they involve the cornea, are notoriously difficult to cure as quickly as syphilitic lesions elsewhere.

2. Many cases of non-syphilitic iritis are benefited by a course of arsenical antisyphilitic treatment. An instance of this was the old lady I mentioned earlier who had suffered from iridocyclitis for many years. On two occasions I have ordered her a course of six injections of N.A.B., and each time the inflammatory symptoms disappeared and did not recur for some months.

FIG. 2



Relations of nerve cells and fibres of visual apparatus. (Schafer.

THE ARGYLL ROBERTSON PUPIL

The association of syphilis with the iris inevitably brings up the problem of the Argyll Robertson pupil, one of the many vexed questions of neurology. I do not propose to go into it at all deeply, because to do so would take up at least one whole lecture and would entail a wide excursion into the anatomy of the central nervous system. In a recent publication by Kinnier Wilson,[7] from which I have gleaned much useful knowledge, he cites no fewer than 72 references, so that the subject is a large one. So many conflicting opinions have been held at one time or other, however, that I feel it is worth while to say something on this subject, especially as some recent work, and in particular some cases cited by Wilson himself, have done much to clarify the pathology of the condition.

In the first place, what exactly is the Argyll Robertson pupil? It seems to consist essentially in the absence or a marked diminution in the reaction of the pupil to light with preservation of its reaction to accommodation-convergence. There may or may not be associated myosis, and the consensual reflex to light on illuminating the fellow eye may or may not be present. The lesion is to be regarded as the consequence of destruction, whether by toxins, new growth or trauma, of a certain part of the pupillo-reflex arc. It would therefore follow that, although the Argyll Robertson pupil is in a high percentage of cases due to neurosyphilis, it is not necessarily pathognomonic of this disease.

It may be of service to mention other diseases in which it occurs, though these are well known. First and foremost is lethargic or epidemic encephalitis, a disease which is particularly interesting, since some cases of it show the reversed Argyll Robertson phenomenon—i.e., reaction to light and none to accommodation-convergence. Secondly, it has been found in cases of disseminated sclerosis, and in syringomyelia and syringobulbia, while chronic alcoholism has also been known to produce it. Most interesting of all, however, from the pathological standpoint are the cases of cerebral tumour which are associated with an Argyll Robertson pupil. A sufficient number of cases would now seem to have been published to establish the truth of the observation that tumours in the region of the third ventricle, aqueduct, or anterior corpora quadrigemina may give rise to this type of pupil reaction. In particular, injury of the anterior corpora quadrigemina appears to cause it. This is interesting, if we follow for a moment the path of the pupillomotor reflex (Fig. 2).

The afferent fibres subserving this purpose leave the retina by the optic nerve and undergo a partial decussation at the chiasma, whence they pass to the anterior corpora quadrigemina. From here their path to the third nerve nucleus is not yet certain, and one observer (Majano [8]) has even suggested that the fibres have no cell station in the third nerve nucleus at all but pass directly as preganglionic fibres to the ciliary ganglion and thence to the sphincter iridis. The path of the impulses bringing about contraction of the pupil in association with accommodation-convergence must necessarily begin in the cortex (since this is a willed movement, synkinetic with convergence) and go on to the third nerve nucleus. It would thus appear that, distal to this nucleus, the pathways for iris contraction in response to light and to accommodation-convergence are identical, and this is shown experimentally by the fact that lesions of the third nerve trunk never cause an Argyll Robertson pupil reaction. Hence the site of the lesion must be on the afferent side of this nucleus, and the most likely one seems to be in the neighbourhood of the aqueduct, where fibres passing from the corpora quadrigemina to the third

nerve nucleus may be caught before they enter the latter. Moreover, the accommodation fibres are sufficiently far removed from this neighbourhood not to be affected.

The special ability of syphilis to produce the lesion is to be attributed to the peculiar affection of the syphilitic toxin for the terminal aborisations of afferent nerves, the toxin spreading from the aqueduct into the subependymal tissues. The localisation of the lesion to this part of the brain may also serve to explain the myosis which is so frequently present, since it is probable that fibres carrying inhibitory impulses from the cortex to the sphincter iridis pass through the peri-aqueductal tissue, and so are affected by the toxin diffusing into this tissue.

In the interest of brevity I have made these remarks rather didactic. The localisation of the lesion producing the Argyll Robertson pupil is not yet by any means certain, and there are still several theories, but the one I have just given seems to be the most logical and to fit in best with observed clinical and pathological data and so to be worthy of notice, even in a general lecture.

It seems possible for an Argyll Robertson pupil to develop apart from any other manifestation of organic disease. I have seen one or two myself, and the cases have been carefully annotated and described by Foster Moore [9] and by Gordon Holmes.[10] The principal characteristics are that the affected pupil is usually larger than normal and does not contract to any form of light stimulus, the contraction to convergence being slow and relaxation also slow, usually taking 8 to 10 seconds, and in some cases as long as 90 seconds. Only one eye is involved as a rule and there is no sign of syphilis either serologically or clinically. In Foster Moore's cases, which number 15, there was no constitutional disease, nervous or otherwise, but in Gordon Holmes's 54 cases there were disturbances of some of the other reflexes in 19—e.g., the knee- and ankle-jerks might be absent. These cases are important and, judging by the numbers reported, are commoner than one would think. It does not do, however, to assume that a patient belongs to this category until syphilis has been definitely disproved.

This was brought home rather forcibly to me by a patient with an apparent Argyll Robertson pupil referred by a physician who expressly stated that there was nothing in the history to support the diagnosis of syphilis. She came after I had read the articles to which I have just alluded, and seemed to be a clear case of the condition. Vision in the eye with the Argyll Robertson pupil could not be improved beyond 6/12, though the other was normal, but this could be accounted for by the presence of a small area of pigmentary disturbance in the macular region of the retina. With the non-luetic hypothesis still in my mind, I inquired whether she had ever looked at an eclipse of the sun, since this might produce the pigmentary disturbance. I was rewarded by the assurance that she had done so when abroad a few years ago, and that while looking she had kept the left eye closed.

The case seemed a clear one, but to be on the safe side I thought it as well to have a Wassermann done—which, I need hardly add, was positive.

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B. COLI MENINGITIS IN THE NEW-BORN

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IN post-mortem examinations on new-born infants during the last year or so at Queen Charlotte's Hospital, three cases of meningitis due to the *Bacillus coli* have been seen. In one only of these was the diagnosis made during life; the other two were thought to be cases of intracranial hæmorrhage.

Cruickshank [1] believed that in many cases, possibly the majority, there is post-mortem invasion of the tissues by the organism: "one hesitates to attribute to coliform organisms a pathogenic rôle, but there are some cases in which they may be the causal organism." In one of my cases *B. coli* was recovered in pure culture from purulent cerebro-spinal fluid during life; in the other two cases post-mortem examinations were made shortly after death, and the organism was not only cultured, but found in direct smears of the pus. It seems likely that these three cases, at any rate, are true cases of *B. coli* meningitis.

CASE RECORDS

CASE 1.—Girl born on April 10th, 1931, four weeks prematurely; the first baby of an apparently healthy mother. Normal labour; the child seemed perfectly well immediately after birth, took the breast well, and cried lustily. Puerperium entirely normal.

April 14th (fourth day): moderate amount of bright red blood passed per rectum during the night; 12 c.cm. of mother's whole blood injected into the child's buttocks, after which there was no more melæna.

April 17th (seventh day): mild fever, refusal to take the breast, and two loose green dyspeptic stools. Considerable œdema of the lower limbs (pitting on pressure) and of the scrotum, but no œdema of the back of the trunk, head, or arms. Nothing abnormal found in the abdomen or chest. Colour good. No abnormal physical signs in the central nervous system; fontanelle not tense. Cord normal. Skin normal. The baby did not seem ill.

April 18th (eighth day): temperature of 102·6° F. A catheter specimen of the urine showed no pus, but large numbers of Gram-negative bacilli; on culture a thick growth of coliform bacilli was obtained.

April 20th (tenth day): still passing green stools and developing sore buttocks. Œdema of lower limbs unchanged, but now has a puffy face.

April 24th (fourteenth day): œdema much the same, but hands and feet now definitely in a tetanic position. Chvostek and Trousseau's sign negative. Fontanelle apparently quite normal. No rigidity or paralysis and no squint. Nothing abnormal was found in the heart, lungs, or abdomen. Urine: no albumin and no pus.

At this point the case closely resembled those recently described by Shannon [2] under the title of Tetany, General Œdema, and Cerebral Compression in the New-born (see below), and so the child was ordered calcium chloride grs. 5 twice daily. In view of the absence of nervous signs apart from the tetany and apparently a normal fontanelle, no lumbar puncture was done.

April 25th (fifteenth day): the child had four fits in which she made "a curious cooing noise," screwed up the left eye and left angle of the mouth; this lasted about 15 seconds then ceased abruptly.

April 26th (sixteenth day): three more fits, as before. Urine: no pus.

April 27th (seventeenth day): four fits, as before. There was now more œdema of the eyelids, but no increase in œdema of the legs. The hands and feet were now in an extreme tetanic position. All reflexes increased; bilateral extensor response very marked. No increase in tension of the fontanelle. No squint or nystagmus. No stiff neck. No fever. No disturbance of respiratory rhythm—in other words, Shannon's complete clinical picture. Accordingly calcium-Sandoz (1·0 c.cm.) was injected intramuscularly and 0·25 c.cm. of parathormone subcutaneously.

April 28th (eighteenth day): condition of the child unchanged. Urine: no albumin or pus. Considerable loss of weight and pallor. Slight increase in tension of the fontanelle. Lumbar puncture in three places was unsuccessful.

April 29th (nineteenth day): death.

Post-mortem.—The hands and feet of the child were still held in an extreme tetanic position, the most marked I ever remember to have seen. The brain was covered with a thick green layer of pus, almost like wash-leather. The pus was thickest at the base and at the tip of the temporal lobes; apparently the pus had spread upwards from the base towards the vertex. The pus was so thick over the spinal cord that obviously no fluid would have passed through the needle on lumbar puncture. The right middle ear was also full of pus, but the left middle ear was free from infection.

The heart, lungs, pericardium, and pleura were all normal to the naked eye; no thymic enlargement. The liver and spleen were slightly enlarged; nothing abnormal was seen on section. The kidneys, ureter, and bladder appeared healthy. No microscopical changes were found in the thyroid or parathyroid glands.

Direct smears of the pus from the meninges and right middle ear showed *B. coli*, and on culture an almost pure growth of this organism was obtained.

CASE 2.—A full-term female child, born after a difficult labour with forceps. White asphyxia immediately after delivery, which disappeared after a hot bath and an injection of 1 c.cm. of coramine intramuscularly. For the first 36 hours of life no abnormal symptoms were noted except that the baby was rather drowsy, but next day there were periods in which the baby was restless and crying continuously alternately with periods of somnolence. The baby took the breast with difficulty.

On examination there was slight stiffness of the neck and the mouth was set in a straight line suggesting an early risus sardonicus. Fontanelle: normal tension. Pupils small; occasionally nystagmoid jerks. Kernig's sign negative; Chvostek sign negative. No abnormal physical signs were found in the heart, lungs, or abdominal organs. Urine: no albumin or sugar; nothing abnormal microscopically. Cord apparently healthy. Mild icterus neonatorum.

The diagnosis was intracranial hæmorrhage following prolonged labour with forceps and the treatment was absolute rest with small doses of chloral.

The next day, the fourth day of life, the condition of the baby was much the same, except that now there was slight irregularity of the heart—occasional bursts of tachycardia, followed by a succession of beats at the normal rate. Jaundice slightly increased. The respirations were accelerated and although no definite Cheyne-Stokes respirations were seen, they tended to be irregularly grouped. The fontanelle was now certainly a little tense, so a lumbar puncture was performed, and to my great surprise about 1 c.cm. of thick pus was withdrawn after gentle aspiration with a syringe. From this pus *B. coli* was obtained in pure culture. Half an hour later the child had a general convulsion and died.

At the *post-mortem examination*, 12 hours after death, the brain findings were identical with those of Case 1. Pus was present in the left middle ear, not in the right; a pure culture of *B. coli* was grown from this pus.

Pharynx, nasopharynx, and tonsils microscopically normal; no ulcerative lesion of the mouth. Cord: no evidence of inflammation. No ulcerative lesions were seen in the stomach, duodenum, small or large intestine. Slight enlargement of the liver and spleen, microscopically early fatty degeneration. The kidneys appeared normal to the naked eye.

CASE 3.—Born on Sept. 10th, 1931, weighing 8 lb. 9 oz. The mother had had a myomectomy performed at Chelsea Hospital nine years previously, and when seen in the antenatal department at Queen Charlotte's on April 4th more fibroids were found. A note on August 10th says that the head could be pushed in well; per vaginam no obstruction, but fibroids tender on palpation.

She was admitted for induction, and pitocin (two units hourly for six doses) was given on August 31st, but since no pains came on during the following five days bougie induction was begun on Sept. 5th. During Sept. 8th and 9th, pains were very slight and little advance was made by Sept. 10th, so finally forceps were applied and the baby was delivered without any difficulty.

Immediately after birth the baby seemed quite normal, but on the third day the temperature rose to 101° F. On examination it was noticed that the child seemed abnormally limp and toneless and there was a peculiar fixity of gaze, but no rigidity or paralysis, and the fontanelle was not tense. The respirations were normal, and no abnormal physical signs were found in the abdomen, heart, or lungs. Mouth quite moist. Lumbar punctured in three places without success. Chloral was given, and the child kept absolutely quiet. Next day the fixity of stare was more marked, the child was refusing the breast, and there was now definite head retraction; the fontanelle was not tense. Death occurred a few hours later.

Post-mortem.—Changes in the brain identical with those in the other two cases. No pus in the middle ears, but pus in both pleural cavities. Macroscopically the heart, lungs, and abdominal organs appeared normal. Direct smears of the pus from the pleura and meninges showed *B. coli*, and this organism was obtained in almost pure culture.

DISCUSSION

Cases of *B. coli* meningitis have long been known. In 1895 Scherer [3] gave an excellent description of three infants, almost exactly the counterpart of Cases 2 and 3 described above. The condition is, however, said to be comparatively rare, and in 1926 Neal [4] could only collect 42 cases. The point of greatest interest is the source of the infection. Scherer [3] observed that his cases all occurred at a time when the hospital was overcrowded and thought that the Eustachian tube might have been infected with contaminated bath water; an otitis media resulted and a meningitis followed by direct extension. Such a theory would not fit in with our cases in which overcrowding and contaminated bath water can be absolutely excluded. This primary infection of the middle ear with secondary invasion of the meninges is an attractive hypothesis and would certainly fit in with the clinical picture of Cases 1 and 2, but it is difficult to say whether this infection takes place antenatally, intranatally, or postnatally. Aschoff [5] has shown that passage of liquor amnii up the Eustachian tubes during efforts at premature respiration is fairly common, and that antenatal or intranatal infection can occur seems to be proved by the case reported by Hinsdale,[6] in which after expulsion of the placenta a large quantity of pus came away from the uterus. The baby subsequently died of *B. coli* meningitis. In a case of Barron's [7] it was highly probable that the infection had been conveyed by a finger introduced into the mouth of the infant during labour.

In other cases, the meningitis is apparently part of a generalised *B. coli* sepsis; in some apparently pus and *B. coli* are found in the urine, in others *B. coli* abscesses in the subcutaneous tissues. Case 1 must be regarded as one of these, the melæna on the fourth day being probably the first evidence of sepsis. This case presented considerable difficulty in view of the close similarity to tetany. At this time I had not read Koplik's excellent description of meningitis in the new-born [8] where it is stated that "the most frequent diagnosis apt to be ventured in a meningitis is tetany," but that tetany is even rarer than

meningitis. Shannon's description of Tetany, General Œdema, and Cerebral Compression in the New-born [2] seemed to fit the picture perfectly. In these cases carpopedal spasms, extreme irritability, and sensitiveness to light and sound, increased reflexes and a positive Chvostek's sign were found; also œdema of the extremities and to a less extent of the trunk; and the sign of cerebral compression consisted in (1) periods of depression almost amounting to unconsciousness, (2) a slow pulse, and (3) cyanosis.

In two at least of Shannon's cases there was a history very suggestive of birth trauma, and post-mortem examination in one case showed severe œdema of the brain. On treatment with calcium, parathormone, and ergosterol, some of his cases recovered. Looking back on Case 1, it is clear that lumbar puncture should be performed in all new-born infants showing symptoms of disease in the central nervous system. Only by lumbar puncture can the true diagnosis be established.

Several lessons were learnt from these three cases: firstly, that pressure signs are often absent in meningitis and bulging of the fontanelle occurs late if at all. The anatomical conditions within the skull, the immaturity and lack of functional differentiation of the brain at this early age, the rapidity with which pathological changes in the nervous system of new-born infants takes place, the considerable degree of expansion of the brain that may take place within the skull before there is any evidence of increased intracranial pressure—these all account for the fact that cerebral diseases in the new-born have quite a different symptomatology from those in the adult. Instead of localising cortical or meningeal signs, we are dealing with symptoms and signs which are mainly due to irritation or paralysis of the medulla. In some of the cases reported there have been no symptoms whatever beyond trifling fever and the meningitis has been discovered only post mortem. In doubtful cases lumbar puncture should always be done to settle the diagnosis, although it is futile from the point of view of treatment, as no case has ever yet recovered. The longest duration of the disease I have found reported was in Noeggerath's case.[9] This child, born after normal labour, had convulsions on the eleventh day and œdema and petechiæ of the hands and feet on the seventeenth day. There was also a facies resembling tetanus neonatorum, increased nervous excitability, twitchings on the slightest percussion of the skin, a positive Trousseau's sign (although a negative Babinski and Chvostek's sign), and irregular intermittent fever. In the eighth week there was a bilateral ear discharge. The fontanelle was slack and never bulged throughout the whole illness. Death occurred three months after birth, and post mortem *B. coli* meningitis with an internal pyocephalus was found.

A FURTHER CASE

The following case may be added, in view of the frank cerebral symptoms, although definite evidence of meningitis was not found.

On Nov. 7th a boy was seen at Queen Charlotte's Isolation Hospital, at the age of 4½ weeks. Birth weight: 8 lb. 11 oz. The weight had dropped to 7 lb. 14 oz. on the third day of life, and after this there was a very slow gain, so that the birth weight was not regained till the thirtieth day. During this time there were no symptoms of any kind. Fed on an ordinary milk mixture. On Nov. 7th, the thirty-third day of life, the temperature suddenly rose in the morning to 106·5° F., the infant developed a greyish pallor, the respirations became extremely rapid, and the pulse-rate uncountable.

Seen at 5 P.M. on Nov. 7th, the temperature had dropped to 103°. The baby looked extremely ill, with a toxic appearance—big staring deeply-sunken eyes, and acute dehydration. The mouth and tongue were very dry, and the fontanelle slightly sunken. The respirations were very rapid and shallow, and the pulse could only just be felt. No abnormal physical signs were found in the lungs or heart, and none in the abdomen. No rigidity of the neck and no squint. No specimen of the urine was available.

Diagnosis.—? pyelitis. A catheter specimen of the urine was ordered, and water was given in large amounts by the mouth, also subcutaneously.

Nov. 8th.—At 5.30 A.M. the baby began to have left-sided convulsions. Seen at 10 A.M., the baby was semi-conscious, having rhythmic clonic twitchings about one a second of the left arm and leg and of the left side of the face and tongue. The right ear was pouring stinking pus; the left drum was injected but not bulging. The fontanelle was a little tense. Pupils equal size, reacting well to light; no squint; no stiff neck; Kernig's sign negative; no rigidity of the arms or legs. There was now much less dehydration and the mouth and tongue were moist. Respirations and pulse-rate still very rapid. No abnormal physical signs in the abdomen, chest, or throat. Stools normal.

Diagnosis.—Meningitis secondary to otitis media.

During the day, the following investigations were made: (1) Pus from the right ear swabbed; mixed growth of *B. coli* and *B. proteus* obtained. (2) Lumbar puncture; 0·5 c.cm. of clear fluid under normal pressure removed. Sterile; no increase of cells or protein. (3) 4 c.cm. of blood aspirated from the superior longitudinal sinus for blood culture; pure growth of *B. coli* obtained. (4) Urine cultured; mixed growth of *B. coli* and *B. proteus*. At 10 P.M. he was very much better and now perfectly conscious, but getting dehydrated again. Took water greedily from the bottle. Pus still pouring from right ear; left drum unaltered. Respirations now 36 per minute; no Cheyne-Stokes respiration. No twitchings since lumbar puncture at 10 A.M. Treatment: all food stopped and water given ad lib.; chloral and bromide; H_2O_2 to the right ear.

Nov. 9th.—5 P.M. Temperature 98·6°. Irritable when roused, but otherwise rather drowsy. No stiff neck. ? slight rigidity of the legs; accentuated knee-jerks and bilateral extensor response. A few *right-sided* twitchings were noticed in the morning; none present at 5 P.M. Fontanelle normal. Abdomen, chest, and throat normal; mouth now quite moist. Normal stools. Treatment: 15 per cent. dextrimaltose solution ad lib.; seven feeds of 1 oz. of ordinary milk mixture. Potassium citrate and sodium bicarbonate, grs. 20 of each, four-hourly.

Nov. 10th.—Very much better. No physical signs whatever. Seven feeds of 2½ oz. taken well. Urine: no pus.

Nov. 12th.—Weight: 8 lb. 3 oz. During six days, loss of weight has been 11 oz.

Nov. 16th.—Still rather pale, but has gained 6 oz. in four days; taking all feeds well—six feeds of 4½ oz.; normal stools.

This child was kept in hospital for six to seven weeks more, during which time there was never any recurrence of the cerebral symptoms. An acute attack of fever occurred in December, when the urine was found to contain pus and *B. coli*; this responded rapidly to the ordinary alkaline treatment. Finally, he was discharged well, without any nervous or urinary signs whatever; no ear discharge.

Diagnosis.—B. coli septicæmia with cerebral symptoms, pyelitis, otitis media.

I should like to thank Dr. R. M. Fry and Dr. Elizabeth Cooper, pathologists at Queen Charlotte's Isolation Hospital, Goldhawk-road, by whom most of the pathological work was done; and Dr. Eric Pritchard for permission to publish the cases.

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PAPWORTH VILLAGE SETTLEMENT: NEW HOSPITAL.

A new hospital for men is to be built at the Papworth Village Settlement for Men with gifts of £20,000 from the trustees of the late Mr. Bernhard Baron and £2500 from the joint war finance committee of the British Red Cross Society. The building, which is to be "constructed by Papworth's own industries," is to be named "The Bernhard Baron Memorial Hospital."

TETANUS CAUSED BY TOY PISTOL WOUNDS

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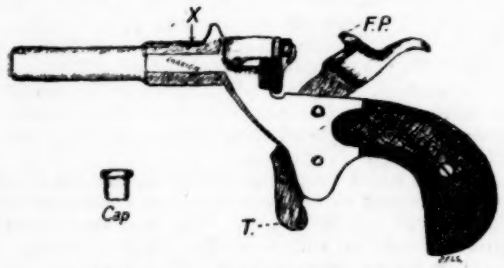
THE low rate of incidence of tetanus at the present time is undoubtedly due to the widespread prophylactic administration of antitetanic serum (A.T.S.), and the following cases are reported in order to indicate an unusual type of injury in which it is essential that serum should be given. In each case the wound was the result of playing with a toy pistol, part of the charge entering the hand. These pistols are often of foreign manufacture and are badly made. Considerable force is required to pull the trigger, which often jams, and it is probable that the pistol is held with two hands in order to steady it. It is obvious that in this case one hand would be placed on the barrel and the metacarpal region of the hand would be just over the hole from which the charge escapes (x). Three of the four cases were fatal, the deaths all occurring in London in the first four months of 1932. These three deaths seem to us important enough to warrant a brief record of the cases.

CASE 1.—A boy, aged 18 years, occupation "domestic" (exact nature unknown), was admitted to the County Hospital, York, on May 10th, 1928.

History.—On May 3rd the patient was playing with a toy pistol and received a wound in the right hand. The charge entered the palmar aspect of the metacarpal region, and emerged on the dorsum. He was treated in the casualty department of the hospital, some fragments were removed from the wound, which was sutured and dressed. No



F.P. = Firing pin. T. = Trigger. X. = Where charge escapes.

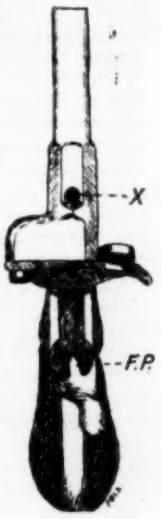
A.T.S. was given at the time of the injury. The wound appeared to be progressing satisfactorily during the next few days, but on May 8th the boy complained of backache and general malaise, and on May 9th had more definite stiffness of the back.

On admission, on May 10th, there was definite trismus and rigidity of legs and arms, but no spasms. The wound of the hand was mildly infected, but there was no cellulitis or pus present and no suggestion of gas gangrene. Treatment with A.T.S. was commenced at once, and there was definite improvement in the symptoms until May 13th, when he was more rigid and had a severe serum rash. He remained in a serious condition for the next five days, and on May 18th there was marked opisthotonus and risus sardonicus. After this day there was definite improvement again, and on May 27th there was no stiffness, he could eat solid food and felt well. He was discharged cured on June 20th.

Treatment.—On admission (May 10th) 2000 units of A.T.S. were given by intramuscular injection, 20,000 units intravenously, and 27,000 units intrathecally; and on May 11th and 12th 10,000 units intravenously with 10,000 units intrathecally. Intravenous injections were given daily until May 18th, when the symptoms were worse and 10,000 units were given intrathecally. Intravenous injections of 10,000 units daily were continued until May 23rd, and for two more days 10,000 units were given by intramuscular injection. In all, 252,000 units of concentrated A.T.S. were administered. The usual symptomatic treatment was carried out; the wound was not opened up, but healed gradually with antiseptic dressings.

CASE 2.—A butcher's assistant, aged 17 years, was admitted to the Royal Free Hospital, London, on April 7th, 1932.

History.—On April 1st, whilst the boy was playing with a toy pistol, which was jammed, the charge from the cartridge entered his left hand between the thumb and first finger. He was treated in the casualty department, the wound being explored, cleansed, and stitched. The following day, as the wound was inflamed, the stitches were removed and fomentations applied. These were continued until he was admitted with tetanus on April 7th. The earliest symptom was backache on April 6th.



On admission, on April 7th, he had definite trismus and generalised stiffness. The wound was deep in the first metacarpal space, and although the tissues were sodden and infected there was no gas gangrene. Antitetanic serum was given, but the symptoms became rapidly worse. After about 12 hours the spasms became almost continuous and the boy died on April 8th, less than 24 hours after admission, and only 40 hours after the onset of symptoms.

Treatment.—On admission the patient was given 20,000 units of A.T.S. by intravenous injection, and 20,000 units by intrathecal injection. In addition, 41,000 units were given by intramuscular injection, making a total dose of 81,000 units of concentrated serum, and for some hours before death chloroform was required for the spasms.

After death the parts surrounding the wound were excised and dissected; the muscles were soft and pulpy, and no foreign material could be detected. Films showed scanty pus cells and a small number of cocci and Gram-positive non-sporing bacilli. Blank cartridges of the same batch as those used by the patient could not be obtained for examination. From a box bought in the same district six cartridges were picked to pieces, the small white circular padding cut up, and the fragments cultured in meat infusion tubes under anaerobic conditions. The cultures remained sterile, with the exception of a few aerobically growing cocci.

The two following cases I did not see, but was told about them by the coroner after the inquest on Case 2.

CASE 3.—A man of 26, a sewerman, was admitted to the Royal Northern Hospital, London, on Dec. 31st, 1931.

History.—On Dec. 24th he bought a toy pistol, and when firing it at home injured his right hand at the base of his first finger. He was treated in the casualty department of the Royal Northern Hospital until Dec. 31st, when he was admitted with lock-jaw. Large doses of antitetanic serum were given, but he died on Jan. 2nd, 1932, about 48 hours after admission.

CASE 4.—A man, aged 50 years, occupation furrier, was admitted to St. Mary's Hospital, London, on March 5th, 1932.

History.—On Feb. 27th he bought a toy pistol, and whilst trying it in the shop received an injury in the left hand at the base of the first finger. He was treated immediately by a chemist, who also dressed the wound for the next four days. On March 4th he complained of a sore-throat. On March 5th he had stiffness of the jaw and was admitted to hospital. He died on March 7th, 44 hours after admission, about 50 hours after the onset of definite symptoms.

Treatment.—On the day of admission the patient was given 5000 units of A.T.S. intramuscularly, 75,000 units intravenously, and 20,000 units by intrathecal injection.

On March 6th 100,000 units were given intravenously—a total of 200,000 units.

The coroner kindly supplied us with a blank cartridge similar to that bought by this patient. It was a different make from those previously tested, being marked with an "E," and the wadding appeared to be rather more bulky. Fragments were distributed into two meat infusion tubes and cultured anaerobically; after 48 hours both showed a cloudy growth, accompanied by a putrefying smell and free gas formation in the medium. The organisms were small, rather slender, Gram-positive bacilli, with occasional longer filamentous forms, and numerous sporing forms containing oval, subterminal spores distending the bacillus. Nothing suggestive of *B. welchii*, and no end-sporing bacilli were seen. These cultures in amounts of 0·1–0·5 c.cm. were injected subcutaneously into mice and guinea-pigs, and were tolerated without apparent ill-effects.

Further attempts to isolate the tetanus bacillus, if it should be present in these primary cultures in small numbers, were carried out by successive platings from the filamentous growing edge and the water of condensation, but without success.

Cultures from the wadding of this cartridge thus yielded bacillus sporogenes only. In view of the difficulty of isolating the tetanus bacillus from mixed company, this failure does not negative the possibility of the presence of tetanus spores, and the demonstration of other anaerobic bacteria indicates the wadding as the probable source of infection.

COMMENT

The similarity of these cases is quite evident. In each case there was a deep wound of the hand, and it is interesting to note that this was the site of injury traditionally believed to be the cause of lock-jaw. Similar treatment was carried out in casualty departments and by the chemist in Case 4, and the wound became mildly infected or appeared to be superficially satisfactory. In no case was there evidence of gas gangrene nor of frank suppuration requiring incision. This type of penetrating wound with mild secondary infection provides almost the optimum media for the growth of anaerobic organisms if such are present, and the primary suture of the wound renders the conditions even more favourable. It should be noted that no prophylactic A.T.S. was given in any of the cases.

The symptoms of tetanus developed in each case between the fifth and seventh day following the injury. Such a short incubation period is well recognised as one of the features of the most severe cases of tetanus. The time elapsing between the initial symptoms and the appearance of definite signs of tetanus was longest in Case 1, where the prodromal backache commenced two days before admission. In the fatal cases the symptoms developed within 18 hours. This rapid development of symptoms has been shown to be an index of the severity of the infection in a series of cases recently reported from an agricultural area, where the symptoms in all the fatal cases developed in two days or less.[1] The treatment adopted for the fully developed disease varied only in the amount of serum which was given. The initial dose given in Case 1, which recovered, was smaller than in any of the fatal cases, although the symptoms on admission were as severe as those of Case 2, who died within 24 hours. The very large dose given to Case 4 did not succeed in preventing a fatal issue. It is, however, impossible to tell at the beginning which cases will prove fatal, and therefore large doses of serum should be given immediately. A very rapid development of symptoms would seem to indicate an unfavourable prognosis.

AMERICAN EXPERIENCE

Tetanus resulting from toy pistol and blank cartridge wounds does not seem to have received much notice in England, but it was well recognised in the United States, where it was known as Fourth-of-July tetanus, owing to the large number of cases following the Independence Day celebrations. In 1903, in spite of official warnings of the danger of tetanus from these wounds, over 400 deaths were reported.[2] The infection in these patients was extremely virulent, the incubation period being only four to five days, and death occurring within 72 hours. In the majority of the cases the wounds were in the hands. In order to reduce the heavy mortality in future years, the prevention of the sale of toy pistols and blank cartridges was recommended, and physicians were advised not to dress the wound without removing the cartridge wad, and also to give a prophylactic dose of A.T.S. The measures taken were evidently successful, for only three deaths were reported after the Independence Day celebrations in 1914.[3]

In an analysis of 813 cases of tetanus occurring in a New Orleans Hospital between 1906 and 1930, Graves [4] reported 24 cases due to blank cartridge wounds, occurring mainly after celebration days—the mortality being 83·3 per cent.

ORIGIN OF INFECTION

It is interesting to discuss the possible origin of the infection in this type of tetanus. The bacilli must either enter the wound in that part of the charge which penetrates the deeper tissues, or be carried in from the skin, or be introduced at a later date. The last suggestion seems the least likely in the cases here reported. The diverse occupations of the patients could scarcely account for this type of infection, especially as the wounds appeared to heal satisfactorily on the surface. Nor is it probable that the infection was carried in from the skin at the time of the accident, though this is suggested as a possible factor in some of the Fourth-of-July cases.

The wad which keeps the powder in the end of the cartridge is said to be made of coarse horse-hair felt, which might convey spores. This wad was investigated in connexion with Cases 2 and 4, but no tetanus bacilli or spores were isolated. Following the 1903 fatalities, a large number of blank cartridges were investigated.[5] In no case was the tetanus bacillus isolated by direct culture, but in one animal series the wad, together with a loop of an aerobic culture, was inoculated into rats, and 9 out of 12 animals died in convulsions. The conclusions reached were that there was abundant evidence from clinical observations that the wads contained tetanus bacilli, although no absolute bacteriological proof could be obtained.

It is evident that tetanus bacilli or spores are present in these toy pistol wounds, and although the number of cases is small, fatalities can be avoided if the importance of a prophylactic dose of serum is realised, and if in addition the wound is excised or laid open instead of being sutured.

Dr. C. Weatherall, bacteriologist to the Royal Free Hospital, has investigated the cartridge wads, and I am indebted to her for the bacteriological reports. I have to thank Mr. F. D. Saner and Mr. R. M. Handfield-Jones for permitting me to use the notes of Cases 3 and 4, which I did not see; Mr. C. A. Joll for permission to publish Case 2; Mr. G. W. Gostling for allowing me to treat and report Case 1, and Dr. Bentley Purchase, coroner for St. Pancras, for giving me much helpful information.

Dr. P. F. L. Simon has kindly made the illustrations of the toy pistol.

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STREPTOCOCCAL SEPTICÆMIA COMPLICATING EPIDEMIC INFLUENZA

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IN a recent symposium in the *Guy's Hospital Reports* [1] the clinical features of streptococcal septicæmia were discussed at some length. The comparative rarity of the disease is evidenced by my being able to find only 21 examples admitted to Guy's Hospital between 1921 and 1930. The two cases to be described hereunder both occurred during an influenza epidemic. The second case was of the fulminant type and similar to Case 2 in Part I. of the paper referred to above.

DESCRIPTION OF CASES

CASE 1.—A lean, sallow but alert boy of 15½, whose mother had died of streptococcal septicæmia following labour, had been seen by Dr. John Parkinson in January, 1931, for a faint systolic murmur heard over his apex-beat. Dr. Parkinson thought, on radiological evidence, that his heart was slightly enlarged, and ordered moderate exercise. The patient played cricket without fatigue or dyspnœa. Of some 20 boys in his house who had not previously had chicken-pox he had been the only one to escape infection during an epidemic in the previous term. His tonsils and adenoids were removed in December, 1925, and there were no tonsillar remnants.

He contracted epidemic influenza on Feb. 1st, 1932, which was probably the eighth or ninth day after contact. He had a slight frontal headache and a mild sore-throat, which was studded with small raised lymphoid nodules. The following day he had a very sore-throat and slight tenderness over his left frontal region with headache, relieved by inhalations. These complaints quickly subsided, but the tenderness reappeared over the left frontal region on Feb. 9th, to disappear next day. On Feb. 11th he had a folliculitis on the posterior pharyngeal wall, and the adenoids, which could be seen projecting below the uvula, also showed purulent follicles. Next day there was an enormous boggy mass on the right, obliterating the right tonsillar fossa and extending as an œdematous swelling well over to the left side of the soft palate. This subsided in three days, but a precisely similar swelling appeared on the right side. There was a large diffuse mass of glands behind the left ear.

He was gravely ill, and there was much difficulty in feeding him. He had the mildest delirium on the night of the 17th, coincident with his fall of temperature or "crisis." On the 16th he vomited practically everything given him and started to have diarrhœa, having five copious very fluid dark brown stools on the 17th, and four the following day. From these *Bacillus coli communis* and *Streptococcus brevis* only were grown. A blood count (17th) showed 12,500 white blood-cells (polymorphs 86 per cent., lymphocytes 5·5 per cent., and mononuclears 8·5 per cent.). On Feb. 18th a small patch of purpuric spots appeared over the anterior fold of his right axilla, and there were numerous scattered petechiæ over his trunk and arms, and a few on his legs. Blood culture, which was done that evening, was negative. Dr. L. G. Parsons saw him with me at this stage and agreed that he had a blood-stream infection with streptococci, and gave a hopeful prognosis. He felt the spleen, which I was unable to feel at any time. From Feb. 16th to 21st the boy had albuminuria, but two microscopic examinations failed to reveal casts or red blood-cells. On Feb. 19th the spots were more numerous and larger, situated mostly on the back and trunk, and a fresh crop appeared the following day, but from then onwards they rapidly faded, leaving definite staining.

At 7.30 P.M. on Feb. 21st he coughed up about 2 drachms of ropy rose-coloured sputum, which was odourless and tasteless. The bacteriological report on this was: direct examination showed pus cells, streptococci, gram-negative bacilli and filaments; gram-negative cocci and fusiform bacilli. The predominant organism in culture was the hæmolytic streptococcus. *Micrococcus catarrhalis* was also grown. No *B. pfeifferi* were seen. Although the expectoration of this material did not immediately relieve his throat symptoms, yet from that time the swelling and glands quickly subsided, until by Feb. 24th the glands were normal. On Feb. 27th he was up for 20 minutes without undue fatigue, and by March 4th he was walking up to three miles a day, and went home to convalesce. During the illness his weight dropped from 102 lb. (Jan. 21st, 1932) to 85 lb. (March 3rd, 1932).

In this case of streptococcal fever the throat bore the brunt of the infection, and there seems no reasonable doubt that he had a quinsy which burst on Feb. 21st, but the succession of purpuric spots occurring synchronously with his diarrhœa, vomiting, and albuminuria, and possibly a splenic tumour, is strong confirmatory evidence that there was a blood-stream infection with streptococci.

CASE 2.—A robust, florid boy of 14½ had an early carditis in July, 1928, following tonsillitis, but made a complete recovery. Tonsillectomy was performed in February, 1929. His pulse-rate during convalescence from measles in March, 1931, averaged 72. On January 29th, 1932, he "felt rotten" all day but played what the other players called a magnificent game of hockey. That evening, when his temperature was found to be 100·4°, he was put to bed but had no symptoms except malaise and a very injected and slightly œdematous throat. He was considered to have epidemic influenza, having been exposed to it. The following day, when he had a temperature of 105°, a pulse-rate of 130, and a respiration-rate of 28, he still complained only of malaise, and he had no physical signs except a doubtful diminished air entry at the left base, and a thickly furred tongue and throat, and laboured respirations. His leucocyte count was 5000 per c.mm.

Lord Dawson saw him that evening (30th) and came to the conclusion that he had influenza with a streptococcal infection of the throat and possibly of the blood stream as well. Later that evening he vomited much bile-stained material, was incontinent of urine and fæces, and had the most explosive and copious diarrhœa on that and the following day. He was extremely restless and stuporose but not delirious. In view of his low blood count he was given intramuscularly that evening 20 c.cm. of antiscarlatinal serum, followed by 15 c.cm. the next day and 25 c.cm. on the following day. The accompanying table gives his daily blood counts.

On Jan. 31st the diarrhœa and mental derangement disappeared, and he recognised everybody from that time onwards. That day he had one diarrhœic stool. The fur on his tongue was disappearing, and the following day he had a smooth, lilac-coloured, moist tongue dotted with red papillæ. His throat was red and hæmorrhagic in places. On Jan. 31st and Feb. 1st and 2nd there was a trace of albumin in his urine, not measurable by Esbach's albuminometer. He was taking fluids and light nourishment well and was continent.

On Feb. 2nd, high-pitched bronchial breathing was heard over two separate areas the size of a florin, 1 inch from the apex of the right upper chest behind; there was also slight impairment at the right base. He had pain on deep breathing over the apex. That evening he became desperately ill, had acute meteorism, and was tender over the entire abdomen but especially over the right iliac fossa. The dullness at the right base was increasing. Blood culture (Feb. 3rd, when his temperature was 103°) gave a growth of *S. hæmolyticus*. The same organism was later grown from both pleural cavities. Next morning (3rd), when Lord Dawson saw him again, his abdominal condition had completely subsided but the dullness at the right base had increased and low-pitched bronchial breathing and absent

tactile vocal fremitus were noted. He was needled, and some thin chlorine-coloured fluid was obtained which, on settling, gave a sediment of less than ¼ inch in 3 inches of fluid.

From then onwards he held his own, except that his respiration-rate rose gradually to 44 on the 5th, when 15 ounces of fluid was removed from the right chest; this fluid was not appreciably thicker than before, but its removal eased his respiration slightly. His heart was displaced only ½ inch to the left. On Feb. 6th he was again seen by Lord Dawson, who detected a pleural friction rub in the sixth space in the left nipple line. A deep breath provoked pain over this spot. He was then extremely ill, but in view of the involvement of the left chest, and as his white blood-cell count was 23,000, it was decided to drain the right side. This Mr. B. L. Laver did under a local anæsthetic, the patient giving all the help possible by his willing coöperation, despite his grave condition. About 1½ pints of flaky pus drained away at the time of operation and during the night. The improvement after the operation was not marked, partly because the septicæmia continued and partly because of the presence of the effusion which was collecting on the opposite side, and perhaps partly because—despite the dexterity of the operator—the wound was not completely air-tight. The left pleura was needled but only a few drachms of turbid fluid were obtained and the needle gave the impression of underlying solid lung. It was therefore decided to try to make the wound air-tight, which was easily done by the introduction of a Tudor Edwards tube; the patient's breathing and condition quickly improved. However, at 2 A.M. on Feb. 8th he suddenly collapsed and died in a few minutes.

FIG. 1 (Case 1).

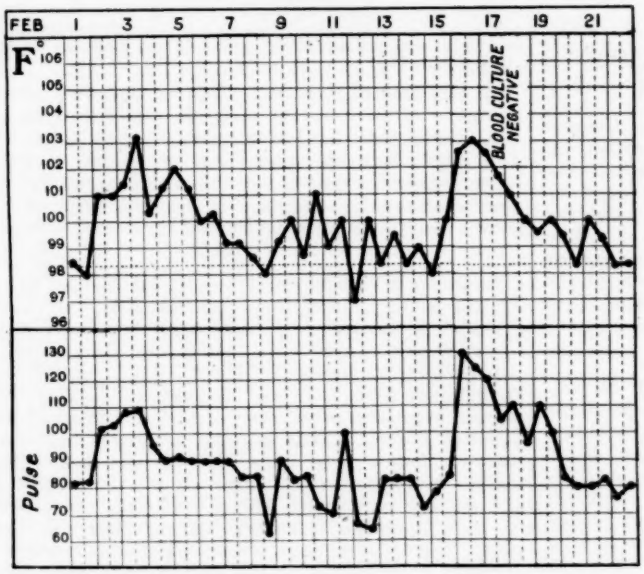
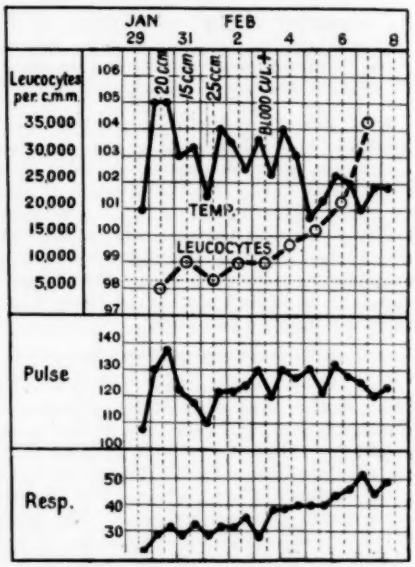


FIG. 2 (Case 2).



Blood Counts of Case 2

Date.	Total.	Polymorphonuclears.		Lymphocytes.		Mononuclears.		Eosinophils.	
		Percentage.	Actual number.	Percentage.	Actual number.	Percentage.	Actual number.	Percentage.	Actual number.
Jan. 30	5,000	66	3,300	28	1400	3	150	3	150
,, 31	10,000	87	8,700	9	900	4	400	—	—
Feb. 1	7,000	85	5,950	11	770	4	280	—	—
,, 2	9,900	84	8,316	11	1089	5	495	1	99
,, 3	10,000	89·5	8,950	6	600	4·5	450	—	—
,, 4	13,000	83	10,790	13	1690	4	520	—	—
,, 5	16,500	84	13,860	13	2145	3	495	—	—
,, 6	23,000	87	20,010	9	2070	4	920	—	—
,, 7	36,000	85	30,600	11	3960	4	1440	—	—

DISCUSSION

Ryle [1] lays stress on the four symptoms of diarrhœa; albuminuria with red cells and casts; a rapidly progressive anæmia; and a smooth, red, desquamated and sore tongue, as a diagnostic syndrome in blood-stream infections with hæmolytic streptococci, but points out that all are not invariably present. Both my cases had transient diarrhœa, but apart from that they had well-formed stools. Both had albuminuria, but one certainly had no red cells nor casts, nor probably did the other. Despite the fact that a hæmolytic streptococcus was grown from the blood of Case 2, yet his hæmoglobin was 95 per cent on the eighth day of his illness. Both had smooth, red, and desquamated tongues, although these were not subjectively sore. The tongue in Case 2 was usually a deep puce colour, corresponding to the colour of his lips and extremities, which was little influenced by oxygen intake.

What remains a most useful diagnostic sign is the mental acuteness of these sufferers, long since recognised in the puerperal cases. As Osler and McCrae [2] put it: "Certain clinical features separate the streptococcus from the staphylococcus infection, chiefly the absence of delirium, a rather abnormal mental acuteness, and the presence of a greater degree of anæmia." Apart from the initial stupor of Case 2, and the very mild delirium of Case 1 at a time when his temperature was dropping and he was considerably dehydrated owing to his throat condition, delirium was completely absent. In dealing with these very ill patients one cannot but be grateful to them for their willing coöperation.

Influenza and streptococcal septicæmia frequently occur together, and there is no doubt that the patient suffering from the dual infection requires special consideration and handling. It has long been known that influenza initially produces a leucopenia which may pave the way for the entry of the streptococcus into the blood stream. What this may do in a short time is graphically shown in Case 2 (Part I.) of our paper,[1] and those who recall cases during the

epidemics of 1918–20 will probably remember many similar instances. However unwise it may be to draw conclusions from a single case, it seems possible in Case 2 that the serum may have prevented death in the early period of invasion. It has been customary to look upon a moderately high temperature (104°–105°) in infection as a good prognostic sign, but Fig. 2 shows that, though it may give an indication of the quality of the resistance the body is making, it bears no relation to the quantity, if we accept the leucocytic response as a true index of resistance, as I believe we can. As has been shown before, most cases of uncomplicated streptococcal septicæmia have a good polymorphonuclear leucocytosis, and serum is not required, but where the defences of the body have been already hampered—whether by acute infections such as influenza or typhoid, or by such chronic diseases as diabetes or nephritis—then serum has a place in therapy.

The reason for dealing with this point at length is that previously I have tried to show the inefficacy of antistreptococcal serum in septicæmia, and partly to answer some recent criticisms made by A. H. G. Burton and A. R. Balmain,[3] who insisted that antiscarlatinal serum benefited a case of broncho-pneumonia with pericarditis complicating streptococcal septicæmia, and supported their plea for its employment by Cadham's [4] figures: that 45 out of 56 cases of septicæmia (mostly streptococcal) recovered under serum therapy. Careful reading of this paper shows that the method employed by Cadham was to give human serum and 2–5 c.cm. of immune rabbit's serum on alternate days, and Cadham also remarks: "The beneficial results occasionally obtained in sepsis following the use of scarlet fever antistreptococcic serum touches the live question of the relation of the toxins from the various strains of streptococci to one another." Although Cadham's figures are striking, I have the impression that his cases were not unselected, but as no details are given it is not possible to be certain. Burton and Balmain also quote Comber's [5] figures to show that antiscarlatinal serum gives good results in streptococcal septicæmia, but they do not mention that all her cases were of scarlet fever. There is no denying the good results of antiscarlatinal serum in scarlet fever cases, but I see little reason for its use as a routine in uncomplicated streptococcal septicæmia, although the absence of the leucocytic response may give the correct indication for serum therapy in doubtful cases. But whether serum be given or not, success will not be achieved if devoted nursing, hydrotherapy, the expectant treatment of metastatic abscesses, and as complete rest as possible are not allowed to play their part.

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NEW THEATRE AT KESWICK HOSPITAL.—Sir John Randles recently opened a new theatre which he has given to Keswick cottage hospital at a cost of £8000. It is a memorial to the late Lady Randles, and is named after her.

PAYING PATIENTS AT CANTERBURY.—At the Kent and Canterbury Hospital a large temporary ward for children has been erected, and the accommodation thus vacated is to be used for paying patients. The opening ceremony was performed by Lord Northbourne recently.

Clinical and Laboratory Notes

A CASE OF NEPHROSIS

WITH A NOTE ON INFECTION AS A POSSIBLE CAUSE

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THE term nephrosis was originally suggested by Müller [1] to distinguish between degenerative and inflammatory changes in the kidney. Later it was applied by the clinician to differentiate a group of cases exhibiting certain special features—namely, intense albuminuria, gross œdema, low plasma proteins and high blood lipoids, and the absence of hæmaturia, hypertension, retinitis, and nitrogen retention. Such cases were placed in a definite group by Epstein,[2] Munk,[3] and Volhard and Fahr.[4] This dual definition has resulted in a very considerable confusion. The confusion has been increased by two other factors. From the pathological point of view, most examples of tubular degeneration show some evidence of inflammatory glomerular change, while from the clinical point of view many cases of true diffuse glomerulo-nephritis may show, over long periods of time, a clinical picture consistent with a diagnosis of nephrosis as based on the criteria quoted above. The situation has been further complicated by the necessity of distinguishing amyloid disease of the kidney and apportioning it a place in the classification of renal disease.

In spite of these difficulties the term has persisted. The reason for this persistence has been, not its pathological usefulness, which, owing to the varied character and ætiology of renal degenerations, has proved largely illusory, but its usefulness to the clinician to designate a group of cases recognised by him as a definite clinical entity. These cases, which had formerly been included among cases of diffuse glomerulo-nephritis under the headings subacute nephritis, chronic parenchymatous nephritis or hydræmic nephritis, urgently required separation and definition. This has now been achieved by the introduction of the term "nephrosis" or "lipoid nephrosis." A similar clinical picture arising in a patient suspected of amyloid disease may be designated "amyloid nephrosis." Though difficulties of differentiation in given cases between nephrosis and the nephrotic type of glomerulo-nephritis are bound to arise, they do not invalidate the use of the term. A careful watch for the occurrence of hæmaturia, hypertension, retinitis, and signs of deficient renal function will assist in the admittedly difficult differentiation.

Nephrosis as defined above is a relatively rare condition. The case here described is believed to be an example. It is considered worthy of recording because it has been carefully observed and because it may present some evidence concerning the unknown ætiology of the condition.

CASE RECORD

A married man, aged 49, was admitted to the London Hospital on April 17th, 1931. (No. 30567.)

Ten weeks previously he had had an attack of influenza; he had suddenly felt ill and tired, with a slight cough, headache, and fever, associated with profuse sweating. He remained in bed for ten days and did not return to work for a further period of ten days. After having been back at work for about three weeks he began to notice swelling of his legs towards the end of the day. This got worse

during the next few days and spread up to his back. He saw his doctor who reported his urine to be "solid with albumin." At this time, apart from feeling a little tired, he complained of no symptoms other than the swelling. He had never noticed any change in the colour or quantity of his urine.

He had contracted syphilis thirty years ago and been treated with medicine. Nine months before admission he attended the Royal London Ophthalmic Hospital for failing vision. He was given seven injections of N.A.B. (novarsenobillon) at weekly intervals. Since 1924 he had suffered from frequent attacks of "nasal catarrh."

EXAMINATION AND INVESTIGATIONS

He was a well-developed man with slight pallor of the skin and mucous membranes. There was no puffiness of the face, but well-marked pitting œdema over the feet, legs, and to a lesser degree over the lumbar region. The heart was not enlarged. There was no vascular hypertrophy. Blood pressure 115/80. At no time during the whole course was any hypertension observed. A few scattered rhonchi were heard in both lungs. There was no ascites. The kidneys could not be felt. The pupils reacted to light somewhat sluggishly. Examination of the fundi oculi revealed old neuroretinitis shown by the presence of scattered areas of dust-like pigmentation in both retinæ. This was considered to be syphilitic in origin.

At this time investigations showed the following:—

Urine: S.G. 1022. Acid 2/3 volume of albumin. Daily volume 1000–1500 c.cm. Deposit, occasional leucocytes and red cells. Culture, streptococci.

Renal function: Blood-urea 0·022 per cent. 1st vol. 71 c.cm. 2nd vol. 69 c.cm. Phenolsulphophthalein 40 per cent., 20 per cent. Urea excretion, 0·84 per cent., 0·84 per cent. Standard clearance 83·20 per cent. of N., 81·90 per cent. of N.

Plasma protein, 4·45 per cent. Blood Wassermann reaction, positive. Blood cholesterol, 0·43 per cent.

Blood count: Red cells, 5,000,000; hæmoglobin, 70 per cent.; colour-index, 0·7; leucocytes, 11,200; polymorphs, 68·5 per cent.; eosinophils, 3·0 per cent.; small lymphocytes, 10·5 per cent.; large lymphocytes, 13·5 per cent.; large hyalines, 4·5 per cent.

COURSE OF ILLNESS

This case was observed in hospital for a period of nearly 14 weeks. As will be seen from the accompanying chart there was little change either in weight or in protein output during the first five weeks. His general condition remained unchanged. He then began to complain of "nasal catarrh." There was nasal obstruction, general malaise, and increase of œdema. Vomiting occurred on two or three occasions. There was no fever. This exacerbation lasted about ten days, and towards the end there was a definite diminution in the 24-hourly volume of urine to 325 c.cm. There was also a marked increase in protein loss.

He was seen by Mr. Norman Patterson, who found masses of polypi in both sides of the nose. Radiography showed no abnormality of the nasal sinuses. The polypi were removed under local anæsthesia on June 17th, 1931. Within the next few days his general condition began to show a steady and definite improvement which continued up to the time of his discharge on July 22nd, when there was no œdema and only a trace of albumin in the urine. During the whole time in hospital he was kept on a moderately full but strictly salt-free diet, with fluid up to two pints daily. Urea, 20 g. twice daily, was given over the period of June 10th–29th. The duration of the illness was about 18 weeks.

Six weeks after discharge from hospital he was back at work and feeling quite well. There had been no recurrence of the œdema and the urine was clear; the plasma protein and blood cholesterol had returned to normal limits (plasma protein, 6·55 per cent.; blood cholesterol, 0·22 per cent.). He was last seen on March 9th, 1932. He then stated that he felt perfectly well and had not noticed any further nasal obstruction since his operation. There was no œdema and the urine was clear.

DISCUSSION

The accompanying chart shows the sequence of events in the progress of the case. It illustrates the relationship of the recrudescence of the "nasal catarrh" with both the increase in weight due to œdema and the increase in protein output.* After the attack had subsided these returned to their previous levels. At this point however the patient was given 20 g. of urea twice daily. This was followed within 48 hours by a steady fall in weight, but no immediate diminution in the protein output. This latter only began after the removal of the polypi.

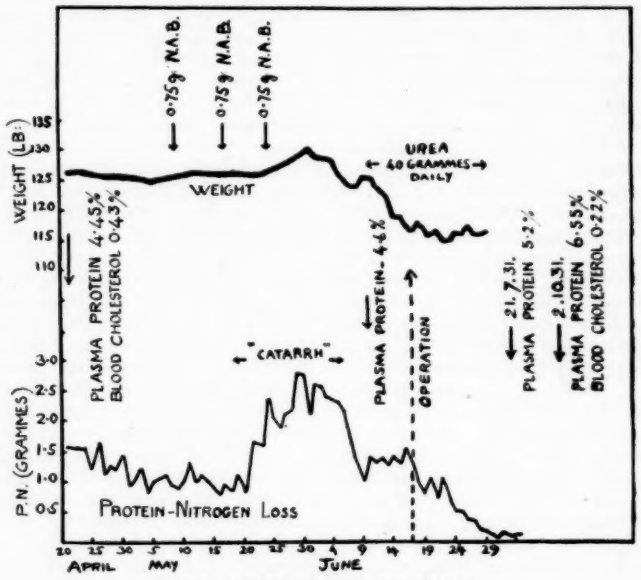

Chart to illustrate progress of case.

As an explanation of the course of this case there would seem to be several possibilities—namely:—

(1) That this was a case of nephrosis pursuing a relatively benign course with ultimate recovery and remaining uninfluenced by any treatment. This possibility must be admitted as such cases have been observed particularly in children.

(2) That the improvement was due to the administration of urea. Excellent results from the use of this drug have been reported by Volhard, Maclean, Wordley,[6] and others. An immediate fall in weight followed the administration of urea in this case. This was accompanied by a diminution in œdema and an increased urinary output, but there was no change in the protein output until the loss in weight had practically ceased.

(3) That this was a case of syphilitic nephrosis. Such cases were described by Munk,[3] but they occurred almost exclusively during the secondary stage of lues. Isolated cases have been reported as occurring years later. One of the cases of nephrosis reported in Russell's [7] series, a man aged 47, had been given about 15 injections of N.A.B. together with mercurial treatment for syphilis contracted 18 months before death, the Wassermann reaction being subsequently negative. Hurst [8] and Dowling [9] have reported cases of "syphilitic nephritis" occurring many years after the primary infection. Some of these responded to treatment with silver salvarsan and iodides in a very remarkable way. In the present case the primary lesion occurred 30 years

* The protein output was determined by daily estimations by the method of Kerridge.[4]

before, seven injections of N.A.B. were given nine months ago, and three injections of N.A.B. as shown in the chart. The Wassermann reaction was positive. It is difficult to believe that these last three injections were in any way connected with his recovery.

(4) That the nephrosis bore a definite relationship to the infection. Cases of chronic nephrosis in children are described by Clausen.[10] He believes them to follow infection with the *Staphylococcus aureus*, particularly of the paranasal sinuses. In Clausen's cases, however, it is not easy to be sure that all are true nephroses and some not nephrotic types of glomerulo-nephritis. In Bennett's[11] three cases, one was preceded by a chill. One of Russell's[7] cases was initiated by coryza, earache, and headache. In his discussion of "genuine nephrose" Volhard[12] states his belief that all such cases are really due to a chronic infection, could its site be determined.

Such a view of the ætiology in the present case is supported in the first place by the fact that the onset was preceded by a generalised infection. Secondly, by the relationship of the recrudescence of the infective process with the renal manifestations. Thirdly, by the culture of streptococci from the urine on two occasions. Lastly, by the very striking clinical improvement and corresponding diminution in protein loss which was observed to follow the operation. This case again demonstrates the possibility of complete recovery in patients with nephrosis, even after the persistence of the disease for many weeks.

In conclusion I have to thank Prof. Arthur Ellis for his kind permission to publish this case, and Mrs. P. Tookey Kerridge, Ph.D., for allowing me to make use of her observations on the protein output.

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AGRANULOCYTIC ANGINA
COMPLICATING HODGKIN'S DISEASE

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THIS case is reported, first, because the complication of agranulocytic angina in Hodgkin's disease is an extreme rarity; secondly, because of the difficulty that was experienced in diagnosing the local condition owing to its resemblance to an ordinary diphtheritic membrane; and lastly, because I am not aware that a case has ever before been reported in a child; the condition nearly always occurs in middle-aged women.

PRIMARY HODGKIN'S DISEASE

The patient, a girl of 7 years, was admitted to King's College Hospital in July, 1930. Her past history consisted of measles two months previously, followed by a swollen neck. On admission there was a large mass of glands on each side of the neck, and discrete enlarged glands in both axillæ and groins. There was also evidence of some enlargement of the mediastinal glands. The spleen was not palpable. Lymphadenoma was diagnosed, and X ray treatment was started on August 5th, 1930. One local application to the enlarged glands was given nearly every week for a year, the dose varying from ¼–½ B.mm. In a few weeks the glands became smaller, and by the end of September they had practically disappeared. Other treatment consisted of liquor arsenicalis ℥ 2½ t.d.s., which was started on Sept. 1st and was continued on and off for nearly a year.

At the beginning of August, 1930, a blood count showed:—

Red cells	5,780,000	Polymorph.	56·8%
White cells	1,800	Lymphocytes	27·6%
Hæmoglobin	95%	Eosinophil	15·2%
Colour-index	0·83	Mononuclear	0·4%

In October a leucocyte count showed leucocytes, 3000; polymorph., 57·2; lymphocytes, 36; eosinophil, 4·4; basophil, 0·8; and mononuclears, 1·6 per cent.

By this time the glands of the neck were normal, and the child was well enough to be discharged. She remained fit until the end of December, when she looked pale and run down and had a little enlargement of the submaxillary glands.

In February, 1931, the axillary and submaxillary glands were slightly enlarged, but in April they became smaller again and her general condition improved. In May, however, the spleen was palpable for the first time, and in June and July fresh enlarged glands frequently appeared in the neck, axillæ, and groins. They always disappeared with the local X ray treatment, but as soon as one group went a fresh group appeared elsewhere. All this time the child was really quite well, and was attending school.

AGRANULOCYTIC ANGINA

On Sept. 10th, 1931, the child developed a cough with pyrexia; generalised rhonchi were heard all over the chest, and there was some diminution of air entry at the right base. Two days later she developed a dirty white patch on the right anterior faucial pillar, and on Sept. 14th she was obviously ill and toxic, with a temperature of 103° F.

Her breath was foul, and there was a dirty white membrane the size of a shilling on the faucial pillar. A clinical diagnosis of diphtheria was made (although a swab taken on the 12th showed no Klebs-Löffler bacilli), and 30,000 units of antidiphtheritic serum were given intramuscularly. At this time her cervical glands were slightly enlarged and rather tender. She had a small gland below the right clavicle, and her spleen was just palpable. There were no other physical signs. The tonsils were healthy and her teeth in good condition.

On Sept. 16th the membrane was slightly more extensive. It was not particularly painful. Her cough was better, but her general condition was unchanged and her temperature was 103°. Two days later she was more toxic, and her breath was very offensive. By this time three throat swabs had all proved negative for Klebs-Löffler and Vincent's organisms, but a mixed infection of staphylococci, streptococci, and pneumococci was present in the third. It was then felt that the condition might be a streptococcal angina. On Sept. 21st her general condition was deteriorating, the temperature still being 103°–104° F. The affected area in the throat was definitely larger than on admission, its diameter being almost an inch. The membrane was beginning to separate, leaving an ulcerated and hæmorrhagic base. The membrane had disintegrated by Sept. 23rd, leaving a foul, stinking ulcer from which there was an occasional ooze of blood. A few minute petechiæ were noticed on the right forearm.

On Sept. 25th a blood count was done and gave the following astonishing result:—

Red cells	1,180,000	C.I.	1
White cells	less than 100	Polymorph.	12·5%
Hb.	24%	Lymphocytes	87·5%

The polymorphonuclears were stained by the Shato and Shoji benzidine method, and showed considerable granulation.

The diagnosis of agranulocytic angina was then made. A blood transfusion of 300 c.cm. was given

immediately, and another of 430 c.cm. on Sept. 27th. Neither caused any improvement in the local or general condition. The throat became very foul and the ulcer more extensive, and some hæmorrhage occurred from it. She then developed a terminal broncho-pneumonia and died on Sept. 29th. Throughout the illness the temperature never dropped below 101° F., and it was usually 103°–104° F. The final blood count, done on the day before she died, showed :

Red cells	1,220,000	Platelets	45,000
White cells..	less than 50	Polymorph. ..	44%
Hb.	22%	Lymphocytes ..	56%
C.I.	0·9		

The blood-Wassermann was negative, the van den Bergh normal, and a blood culture taken on Sept. 22nd was sterile after eight days' incubation.

Treatment.—On Sept. 14th she had 30,000 units, and on Sept. 16th 20,000 units of antidiphtheritic serum. On Sept. 18th 10 c.cm. of polyvalent anti-streptococcal serum were given; on Sept. 20th 10 c.cm. of antiscarlet serum, and on Sept. 23rd 10 c.cm. of antipneumococcal serum. An arsenical throat paint was also used for the first week of the illness. No improvement, even temporary, could be detected as a result of any of this treatment.

POST-MORTEM REPORT

The autopsy verified the diagnosis of Hodgkin's disease.

There were slightly enlarged glands in the submaxillary region, along the right main bronchus, and along the upper border of the pancreas. All these glands were firm, smooth, and dark red or plum-coloured. Microscopically the normal anatomy of the gland was found to be replaced by a diffuse cellular infiltration, the chief cell being a moderately large round cell with a big and intensely dark nucleus, the other cells being pale endothelial cells. One or two immature Hodgkin giant cells were also seen. The glands were clearly lymphadenomatous, with superadded acute congestion. The spleen was three times its normal size, and looked like an infective spleen. There was hyperplasia of the splenic pulp, which contained many plasma cells and large round mononuclear cells, probably Hodgkin cells. No granular leucocytes were seen at all. Petechiæ were seen on the pericardium and in the kidneys. The bone-marrow from the middle of the tibia was red in colour. Megaloblasts and red cells were present, but there was not much evidence of myelocytic formation. There were also multiple erosions of the mucous membrane of the alimentary canal, a feature which has been noted before in agranulocytic angina.

COMMENTARY

This case is an example of the type of agranulocytic angina described by Schultz [1] in 1922, and believed by him to be a specific entity. The sudden onset of acute illness, the buccal inflammation and ulceration, the high fever and toxæmia, and the fatal termination are all typical of the disease. The condition is very rare (no other case can be traced in the records of this hospital from 1915–1931), and the occurrence of the disease in a child already suffering from Hodgkin's disease is probably unique.

A condition of agranulocytosis, however, without the sudden onset of a severe illness with inflammation and pyrexia, is not very uncommonly associated with aplastic anæmia, and is a sequel of bone-marrow failure.[2] The causes are those of aplastic anæmia in general, amongst which may be mentioned toxins from a septic focus, toxic substances (such as benzol) which depress the bone-marrow, and the use of radium and X rays in inappropriate doses.

The problem is whether agranulocytic angina is a primary and specific throat infection giving rise to the blood condition (as Schultz thought), or whether there is a pre-existing condition of agranulocytosis which would render the body particularly inefficient in dealing with a chance infection in the mouth or elsewhere. If the latter view is correct, it is surprising that agranulocytic blood counts are not more often found in the ordinary acute general or local infections such as pneumonia or carbuncle; for this type of infection occurs much more commonly than severe buccal infections, and presumably our primary agranulocytic patient would be just as liable to contract them as he would an ulcerated throat. Yet it is a fact that agranulocytic blood counts are very rare in these infections and, when they do occur, are always thought to be associated with a very virulent organism which inhibits the normal reaction of the body; in these patients there is a low temperature, not the high fever found in agranulocytic angina. The fact that such blood counts are not more often found is some evidence in favour of a specific buccal infection. Another argument for this hypothesis is that a primary leucocytosis with a shift to the left of the Arneth index is occasionally found in the early stage of agranulocytic angina.[3] This leucocytosis has presumably occurred before the specific toxin has become potent enough to depress the granulopoietic powers of the marrow.

Most of the recorded cases of agranulocytic angina have been in middle-aged women, and this fact may have some bearing on the problem, but the only suggestion that has been put forward [4] is that a certain degree of leucopenia with relative lymphocytosis is found in healthy women more often than in men, and that this might develop into agranulocytosis if suitable conditions prevailed. It is by no means certain, however, that women do possess these blood pictures more often than men.

The present case does not seem to give any clues. There was certainly some leucopenia soon after the diagnosis of Hodgkin's disease was made, but the percentage of granulocytes was above rather than below normal. This was, however, a year before the onset of the angina. The prolonged X ray treatment may have had a depressing effect on the bone-marrow, and had a blood count been made just before the acute illness it might have been agranulocytic. Dr. Parkes Weber, who has been kind enough to read through this paper, thinks that the X ray treatment probably played an important part in producing agranulocytosis.

My thanks are due to Prof. G. F. Still for permission to publish this case, and to Dr. W. P. H. Sheldon for criticism and advice.

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2. Weber, F. Parkes: The Practitioner, 1931, cxxvii., 430.
3. Piney, A., and Wyard, S.: Clinical Atlas of Blood Diseases, London, 1st ed., p. 46.
4. THE LANCET, 1930, ii., 1405.

HOSPITAL LIBRARIES.—The British Red Cross and Order of St. John Hospital Library is now supplying over 300,000 books and magazines to more than 1800 hospitals in England and overseas. Mr. Hagberg Wright, the chairman, has resigned and is being succeeded by Sir Theodore Morison.

QUEEN CHARLOTTE'S MATERNITY HOSPITAL.—The new and chief feature of this hospital's work during the past year has been the development of research and the Rockefeller Foundation has made a grant for this purpose of 15,000 dollars annually for seven years on condition that approximately 18,500 dollars annually can be obtained from other sources. The number of patients attending in all departments has exceeded that in preceding years. The total expenditure for the whole institution amounted to £37,871 and the total income was £35,543, an increase of £12,383 on the previous year.

MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE

SECTIONS OF LARYNGOLOGY AND OTOLOGY

THE summer meeting of these sections was held on June 10th and 11th at the Portsmouth Eye and Ear Hospital Southsea. On the first day Mr. WALTER HOWARTH, President of the Section of Laryngology, took the chair and a discussion on

Referred Pain

was opened by Mr. LIONEL COLLEDGE (London). John Hunter, he said, noted that suppuration in the antrum caused pain in the frontal sinus, and this kind of pain, confined to the trigeminal, was common. Thus, a patient had acute pain in the frontal sinus; the nose seemed normal, and the removal of an incisor tooth cured the pain immediately. Pain in the teeth often arose from the antrum; again, pain was often referred to the wrong tooth, though not across the middle line. Sometimes pain was referred to an ear which was not the seat of either inflammation or deafness. The source of referred pain in the ear was usually in the pharynx—e.g., calculus in the tonsil, epithelioma of the pharynx, or defective teeth. The classical example was an unerupted or partially erupted wisdom tooth, though any molar might cause pain in the ear, and even a bicuspid tooth might do so. Unerupted teeth could cause remarkable reflex symptoms.

One patient felt pain in the right mastoid process, which was tender; there was functional deafness in the right ear and left hemianæsthesia, in addition to pain in the face. The patient's dentist noted that one of her upper bicuspids was a milk tooth, which lay horizontally in the jaw, and when that had been removed her symptoms disappeared.

Other causes of pain in the ear were empyema of antrum or of the sphenoidal sinus, and malignant disease of the back of the tongue. Stated generally, a lesion in the area of distribution of the trigeminal nerve, of the glossopharyngeal or of the superior laryngeal branch of the vagus could cause pain referred to the ear.

Mr. Colledge related two cases to show how, on occasion, referred pain might prove of vital importance.

A boy, aged 14, had severe aural pain, but there was nothing to be seen wrong with the ear. At the autopsy pus was found around the sphenoidal sinus.

A man had an epithelioma in the lateral wall of the pharynx, low down. For six months he was treated by an aural surgeon for pain in the left ear, though that organ seemed normal in every respect. The operation, when at last it was undertaken, had to be very extensive, but the man still remained well after three years.

Why, Mr. Colledge asked, should the nervous system make this error in allocating the pain? Henry Head believed that pain was felt in the thalamus, and was analysed in the cerebral cortex. The speaker's suggestion was that when pain was referred wrongly it was to an area accustomed to experience pain; in other words, owing to lack of education in this respect, the natural perceptive area was not responsive, and there was a transfer of perception to a region accustomed to such manifestation.

Mr. ERIC WATSON-WILLIAMS (Bristol) said that when earache was complained of, and the ear was normal, the cause was problematical and had to be hunted for. It might be due to temporo-mandibular arthritis, or to mumps. The real trap lay in cases in which an ear was defective yet was not the cause of the pain. He had had two cases of vagus herpes oticus at the onset of lobar pneumonia. The former was very apt to simulate otitis media.

One of these cases was that of a boy, aged 14, who for three days had had severe pain in the ear. He had just had a cold, and when Mr. Watson-Williams saw him he was worse; he was giddy and was vomiting; his temperature was 104·4° F., and the respiration-rate 38. There was a slight sanious discharge from the ear, and extreme tenderness at the tip of the mastoid. The patient had been prepared in the theatre for a mastoid operation, but the case looked like one of pneumonia, and there were crepitations at the base of the lung. Operation was not performed, and 36 hours later the boy had typical pneumonia. There was a ruptured vesicle on the drum, which looked like a perforation.

When no local cause of pain could be found in the ear one should examine mouth, nose, pharynx, and larynx. Otitis media occurred in association with cancer of the nasopharynx and the Eustachian tube, and might be misleading. Sphenoidal sinusitis could easily be mistaken for otitis media, expecially in young subjects. Sometime unexplained referred pain was experienced in intracranial conditions; meningitis might cause pain in the ear, and this might be the first, indeed the only, localising sign. Finally, it was possible to meet with purely functional earache, though that was not strictly "referred pain."

Dr. PATRICK WATSON-WILLIAMS (Bristol) spoke of the importance, when a sinus was involved, of sucking out the contents and so relieving that tension which was so potent in determining the spread of infection. In cases in which pain was felt in an ear and nothing was seen there to account for it, the teeth and nose should always be examined, the latter by endo-rhinoscopy. Even when trouble was found in the ear, examination of the nose should never be omitted.

Mr. C. A. SCOTT RIDOUT (Southsea) laid emphasis on impaction or defects of teeth and on infection of the antrum in cases of pain referred to the ear; radiography, he said, was very important. He had seen several cases of functional ear pain, all in women of about 30 years of age. Some of those patients had "vacuum frontal sinusitis."

Dr. D. R. PATERSON (Cardiff) put in a plea for the recognition of the work on referred pain done by Prof. Francis Dixon, when professor of anatomy at Cardiff. He also pointed out that tonsils had often been removed, though healthy, because they were thought to be the source of aural pain, and that this had persisted nevertheless.

Mr. JOHN O'MALLEY (London) spoke of a patient whom he saw six weeks after having a tooth removed.

The extraction had been immediately followed by bleeding from the nose, and a day or two later by discharge of pus from the nose. Then the patient had pain in the roof of the nose and across the face into his ear, and this merged into the typical pain of frontal sinus trouble. Mr. O'Malley washed out a considerable quantity of pus from the antrum and the next day all the pain had disappeared.

Other speakers took part in the discussion and Mr. Colledge replied.

Polypi

Dr. G. SCOTT WILLIAMSON (London) read a paper on the Genesis of Polypi. It appeared, he said, that there must be some reason which made it inevitable that what were simple inflammatory swellings in other regions became polypoid in the nose and also in the cervix uteri. The chief factor was, he thought, the remoteness of the main blood-supply from its ultimate distribution. It was apt to be forgotten that hypertrophy took place in the various active glands of the nose and throat, as in other regions of the body. When hypertrophy of a structure had to

take place within a limited area, as in the nose and throat, the manifestation was a polypoid one. Experimentally, an irritation which in an unrestricted area caused a simple sessile expansion of mucous membrane, produced in a confined zone polypoid formation. In 40 per cent. of cases of polypus examined there was found at the root of the polyp an adenoma or an adenoid hypertrophy—i.e., the primary lesion was apparently an overgrowth of the mucous glands or the superficial glands of the mucous membrane; the polyp was a large myxoid mass superimposed on an adenomatous formation. It was found experimentally that one had only to reduce the vascular supply of any hypertrophying gland to change its state from hypertrophy to hyperplasia, and once the latter was set up, the condition was on the high road to malignancy. In 17 cases he had been able to trace these stages.

Mr. W. M. MOLLISON (London) said he recognised, clinically, two types of polypi: (1) a small and rare kind seen in patients subject to hay-fever or spasmodic rhinorrhœa; these appeared high up in the nose, and he considered they were of mechanical origin. (2) The common type of polypus, which he had hitherto regarded as infective though he did not feel so certain after hearing Dr. Scott Williamson's paper. In addition there was a type of polypus associated with a good deal of pus—an indication of a change from a mild to a severe infection. He had not found any confirmation of Dr. Williamson's statement that many polypi might become malignant owing to hyperplasia having set in; practically never had he seen an ordinary polypus become malignant. His latest ideas regarding polypi had been upset by a case he saw recently.

The patient was a man aged 52. He had never had any functional nasal obstruction, but he began to complain of symptoms about the right antrum. At the age of 11 he had fallen from a height flat on to his face, severely distorting it and deflecting the septum to such an extent that one could not see into his nose; yet he had but little functional disability. Radiography showed in the antrum a smooth bulge from the right inferior wall of the antrum. The nasopharynx Mr. Mollison found to be normal, and there had been no nasal secretion. The antrum was opened through the canine fossa and in it there was a polypus, and nothing wrong with the mucous membrane except in that localised patch. Mr. Mollison carried out a submucous resection, and there was nothing behind it in the nose.

Mr. F. C. W. CAPPS (London) agreed with Mr. Mollison about the extreme rarity of malignant degeneration in polypi.

Dr. WATSON-WILLIAMS agreed that the clue to the causation of polypi was the anatomical difficulty of maintaining the lymph circulation. His own explanation of the cause of the ordinary nasal polypus with a narrow pedicle was that an infecting agent penetrated the epithelial layers and so got into the submucosa. He had been able to demonstrate cocci in the lymph spaces where an obstructive endolymphangitis was set up, and so an obstruction supervened. The fluid was thus exuded into the cellular spaces, and the result was intense œdema and protrusion from the surface. Chemical or mechanical irritants were also culpable.

Mr. A. LOWNDES YATES said a point of practical importance in this connexion was that the mucous membrane hypertrophied in length, breadth, and thickness, and so there was not room for expansion, and as the pressure was lowest in the lymphatic vessels that was the part cut off. In operating it was important to aim at giving room for the hypertrophy.

Inflammatory Conditions of the Ear

Mr. HAROLD BARWELL (London), introducing a discussion on Types of Inflammation causing Inflammatory Conditions of the Ear, confined himself to the frankly acute affections. What were the paths by which the inflammation might extend from one region to another? Spread by lymphatics or blood-vessels was so rare that it need not be considered in this connexion, though the ear could possibly be involved in the course of a septicæmia of nasal—as of any other—origin. Usually the inflammation reached the ear by continuity along the mucous membrane through the Eustachian tube or by discharges from a septic focus in the nose being blown through the Eustachian tube—the latter being, in his view, far the commoner. Violent or improper blowing of the nose was, he believed, the most important of all causes of aural inflammation arising from nasal inflammation. Three factors which might influence the extension of inflammation from the nose to the ear were: (1) the situation of the nasal lesion; (2) the previous condition of the ear and the Eustachian tube; (3) the virulence of the infecting micro-organisms. The last-named he regarded as much the most important. Apart from general virulence, some strains showed a special tendency to attack the ears.

Mr. T. H. JUST (London) believed that a clear-cut nasal infection, without any disease or abnormality in the nasopharynx, scarcely ever caused aural suppuration. In the cases in which nasal suppuration gave rise to aural suppuration he held that the infection was so severe that the whole mucosa of the upper air-passages was infected at the same time, and, because some stuffiness was present, patients localised the trouble to one side. The most common organism infecting the ear was the *Streptococcus pyogenes*; next came the pneumococcus, staphylococcus, and *B. influenzæ*; others were rare. Chronic antrum and ethmoid infection, per se, were rare causes, while frontal sinusitis was still rarer. Overlooked sphenoidal suppuration sometimes caused persistence of a chronic suppuration in the ears. Otitis media occurring simultaneously with a homolateral antrum infection always developed into an acute mastoid infection. From the aural point of view, an acute ethmoid condition was less virulent. Sinusitis, especially of the antrum, during an influenza epidemic, unless dealt with as conservatively as possible, led to acute otitis media and usually to drainage of the mastoid.

Mr. T. B. LAYTON (London) submitted a classification of infections of or through the upper respiratory tract, according to the patient's liability to develop an osteomyelitis of the mastoid bone due to the hæmolytic streptococcus. The most serious and anxious cases in all otology were those associated with influenza, in a general way, and there were two types of case which he dreaded. One was a flaming mastoid condition supervening on an attack of measles; the other an acute mastoid added to an influenzal or scarlatinal otitis media. Mr. Layton developed his idea of a filtrable virus.

Mr. E. MUSGRAVE WOODMAN (Birmingham) agreed that acute infections in the ear were often caused by faulty nose-blowing or by heavy douching of the nose.

Mr. GAVIN LIVINGSTONE (Seaford) demonstrated a model which he had made to illustrate the Nasal Air-way in the New-born Child.

Saturday was devoted to the examination and discussion of clinical cases, under the chairmanship of Mr. W. M. MOLLISON, President of the Section of Otology. Dr. J. R. B. HERN (London) showed a film illustrating a case of gross deflection of the trachea by a large tumour, and the attempt to remove it.

MEDICAL SOCIETY OF INDIVIDUAL PSYCHOLOGY

AT a meeting of this society on June 9th, with Dr. O. H. WOODCOCK, Vice-President, in the chair, a paper entitled

Individual Psychology and the Children's Clinic

was read by Miss RAYNER. She pointed out that a radical change in the upbringing of children had taken place within the last 100 years. The more understanding attitude of mind which had replaced the older methods of suppression had found practical expression of recent years in the formation of child guidance clinics. Here the child was regarded as a unit in relation to the whole—whether he was good or bad depended largely upon his educators. The work of the clinic began where the child's natural educators had failed to give him the understanding and confidence required for courageous development. For the best results, therefore, the education and re-education of the educators must go hand-in-hand with that of the child. Where the parents could not be brought to coöperate, the child must either be immunised against them, or be removed from home until he was sufficiently self-reliant not to fall back into his old ways of reaction. The child brought to the clinic was one who had not been trained to stand alone. His useless, antisocial behaviour was dictated by his underlying fears, and treatment was directed to the remedying of the defect in social feeling which nervous symptoms or delinquency betrayed. In this way healthy expression replaced a warped outlook upon life, egocentricity and undue authoritarianism were broken down, and the child was guided into freedom, self-reliance, and responsibility.

The CHAIRMAN said that he had been struck with the idea of the "open clinic" described by Miss Rayner. Dr. THOMAS LAWSON remarked that the adult had left the environment in which he acquired his neurosis, the child was still in it.—Miss N. K. HUNNYBUN thought that there might be some difficulty in connexion with the open clinic. The audience might be too critical, and the parents might be antagonised.—Dr. F. G. CROOKSHANK asked whether, in the inculcation of social feeling and encouragement in the clinics, the boys and girls were led to strive for their respective goals, or for the same one.—Miss BAINE said she had found that parents did not mind bringing up their problems in discussion groups, and that this procedure gave encouraging results.

Miss RAYNER said that in the open clinic the skilled and sympathetic psychiatrist was able to promote a friendly attitude on the part of the parent, and the audience did not tend to be critical. The question of the respective goals of the boy and girl did not arise in the clinic. The patients' difficulties were an indication of discouragement, and were regarded from this point of view.

REVIEWS AND NOTICES OF BOOKS

Anatomie pathologique

By MAURICE LETULLE, late Professeur Honoraire à la Faculté de Médecine de Paris. With the collaboration of L. NATTAN-LARRIER, Professeur au Collège de France; A. JACQUELIN, Médecin des Hôpitaux de Paris; L. DUCLOS, Ophtalmologiste Adjoint de l'Hôpital Chirurgical Gouin; and E.-P. NORMAND, Conservateur du Musée d'Anatomie Pathologique Générale Maurice-Letulle (Hôpital Boucicaut). Paris: Masson et Cie. 1931. Three volumes. Pp. 2346. Fr.600.

THESE three large and beautifully reproduced volumes are the final contribution to pathology of an author of great repute. Prof. Letulle's death occurred within a few weeks of his having completed the manuscripts, and the task of publication fell to his son Raymond Letulle in collaboration with the other authors. The work is the fruit of half a century of laborious research and observation. Prof. Letulle throughout his long and active life as a teacher has kept foremost in his mind the importance of teaching the student to visualise at the bedside the hidden pathological changes occurring in the patient. In this book he has striven to show the active processes occurring in living tissues rather than static conditions revealed by museum specimens. No language is better suited to this purpose than French, and Prof. Letulle uses it well. His descriptions are delightfully graphic and concise, his teaching dogmatic and untrammelled by doubts or exceptions. Under his guidance pathology becomes simple, perhaps too simple. Confusing problems of the underlying nature of pathological processes are for the most part avoided, and such notes on pathology as are introduced are sketchy. The work records essentially the observations and experience of Prof. Letulle; few references are made to the researches of others. For those who know enough to discriminate the work will provide an enormous fund of valuable information on morbid anatomy. The collection of beautiful drawings of microscopical preparations here included were executed by A. Karmanski, who worked for a large number of years with Prof. Letulle. Their inclusion makes this work a very complete atlas, the pictures being so well reproduced as to compensate for the occasional defects in the text.

A Handbook of Ocular Therapeutics

By SANFORD R. GIFFORD, M.A., M.D., Professor of Ophthalmology, Northwestern University Medical School, Chicago. London: Henry Kimpton. 1932. Pp. 272. 15s.

THIS book deals with the non-operative treatment of lesions of the eyes. Apart from local treatment—e.g., by drops—such measures as the administration of tuberculin, phototherapy, X rays, radium, and non-specific protein therapy are recommended for various conditions. Prof. Gifford believes strongly in milk injection for gonorrhœal ophthalmia whatever the age of the patient. For ophthalmia neonatorum he naturally and rightly lays stress on frequent efficient irrigation with a non-irritating fluid, but in his view the next most important measure is the use of foreign protein injections. One c.cm. of whole milk boiled for four minutes as an intramuscular injection, repeated every third day with an increasing dose according to the febrile reaction produced, is his prescription for every case, since he believes it to be impossible to pick out in advance the exceptional cases which do not get well with irrigation alone. Prof. Gifford agrees with Mr. Mayou that nitrate of silver should only be used in the later stage of the disease when the discharge is slight. He recommends milk injections also in doses up to 10 c.cm.

for adults with cyclitis and other conditions due to toxic infections, and in smaller doses for those cases of interstitial keratitis which do not respond to specific treatment, of which, by the way, he is a strong advocate.

In the main the treatment suggested is on orthodox lines. Mercurochrome is a favoured drug for conjunctivitis. A method of treating in-growing lashes by diathermy instead of the more prolonged and therefore more painful electrolysis is mentioned. The use of glaucosan in chronic glaucoma is discussed, also the intravenous injection of hypertonic solutions in acute glaucoma, with the warning that there is always danger in delaying operation too long. Prof. Gifford advocates simple massage of the eyeball in the presence of corneal scarring from superficial ulcers, in glaucoma as a temporary measure to gain time, and in cases of obstruction of the meibomian ducts. For syphilitic optic atrophy, generally considered a hopeless condition, he has been trying the injection of mercurial solutions into the cisterna magna through a needle inserted between the occipital bone and the atlas—with what success does not yet appear.

Synopsis of Midwifery and Gynæcology

Fifth edition. By ALECK W. BOURNE, M.B. Cantab., F.R.C.S. Bristol: John Wright and Sons, Ltd. 1932. Pp. 426.

THIS book has consistently improved with successive editions. It now contains all that is required for revision purposes by students up for final examinations and it should be brought to their notice. The new diagrams of the development of the early ovum are exceptionally good, although the legends might be expanded with advantage. The description of the technique of radium treatment for carcinoma of the cervix is a noteworthy addition which will be welcomed. The sections on ovarian physiology are not quite up to date and Heape's scheme for the œstrus cycle might now be omitted. The book has now reached a size beyond which a synopsis cannot be expanded without becoming less useful.

Sulphur Bacteria

A Monograph. By DAVID ELLIS, D.Sc. Lond., Ph.D., F.R.S.E., Professor of Bacteriology, Royal Technical College, Glasgow. London: Longmans, Green and Co., Ltd. 1932. Pp. 361. 21*s*.

THIS work deals with the microbiology of that group of bacteria which have sulphur granules present in their protoplasm. In the past this group has been neglected by bacteriologists, but now it would appear that the bacteriologist is held up for want of a more complete knowledge of biochemistry. Unfortunately, many problems of sulphur metabolism remain obscure. The isolation of the sulphydrol compounds towards the end of the last century and the work of Hopkins and his school on glutathione indicated the importance of sulphur in tissue metabolism. Recent observations, however, have plunged biochemists into confusion, since it is now by no means clear that glutathione plays any part in the normal oxidative processes of cells. The biochemist can hardly be expected to solve the bacteriologist's difficulties when he is already surrounded with so many of his own.

After a general introduction, Dr. Ellis devotes a chapter to sulphuretted hydrogen in connexion with sulphur bacteria, and then gives a good summary of our knowledge of the metabolism of the sulphur bacteria. He then describes the various methods of culture and the principles of classification. Much space and many illustrations are given to the leuco- and rhodo-thiobacteria, the intimate structure of the cell, and the influence of external phenomena such as light, are dealt with in one chapter, and the mechanics of ciliary movement and the colouring matter of the sulphur bacteria are discussed in another. A large bibliography and three separate indices conclude the volume.

La soufre en biologie et en thérapeutique

By M. LOEPER, Professeur à la Faculté de Médecine de Paris, Médecin de la Pitié; and L. BORY, Ancien chef de clinique à la Faculté de Médecine de Paris. Paris: G. Doin et Cie. 1932. Pp. 342. Fr.65.

THIS book deals with sulphur in all its various phases, starting with the flowers and finishing with glutathione, French thermal establishments and the value of drinking sulphurous spa waters. The illustrations range from pictures of chemical apparatus to photographs of people cured of psoriasis, and some very attractive looking pictures of French watering-places are included.

Pettibone's Text-book of Physiological Chemistry

Fifth edition. Revised and rewritten by J. F. MCCLENDON, Ph.D., Professor of Physiological Chemistry, Medical School, University of Minnesota, Minneapolis. London: Henry Kimpton. 1931. Pp. 370. 18*s*.

Prof. McClendon's revision of this well-known American work is an attempt to provide in one volume a handbook covering the elements of pure chemistry, and of organic and inorganic physical chemistry and physiological chemistry, together with a certain amount of practical work. Any such attempt can only result in the production of a rather superficial book. Some of the information provided is very sketchy and the style is distinctly American. The practical section is written in that irritatingly staccato manner which gives the student the impression that he is being bullied. For example, scattered throughout this section one sees between direct practical instructions such crisp words of command as "Write the equation," "What do you conclude?" and so on. The work has some useful points, but it is doubtful whether it will appeal to English students and teachers.

Die Elektro Chirurgie

By Prof. Dr. FRANZ KEYSER. Leipzig: Fischers Medizinische Buchhandlung. Pp. 238. M.52.

IN the early sections of this important book the technical side of surgical diathermy is clearly described. Prof. Keyser uses the spark gap apparatus giving damped waves, instead of the three electrode valve set, providing undamped waves which is much more expensive to manufacture. His results seem to be as good as those obtained with the excellent valve machines made in this country. The methods of employing diathermy are described in a thorough fashion, and the rest of the book gives an account of diathermy from a regional point of view, particularly in the treatment of cancer. The illustrations show a remarkable series of photographs of patients, before, during, and long after treatment. Prof. Keyser concludes his book by a discussion of accessory measures in the treatment of patients of which subject he has made a prolonged study.

THE LANCET.

LONDON: SATURDAY, JUNE 18, 1932.

CENTENARY OF THE BRITISH MEDICAL ASSOCIATION

AN advertisement on the cover of THE LANCET of July 7th, 1832, announced a public meeting to be held at Worcester, for the purpose of taking into consideration the establishment of a projected medical association in that city. The objects in view were :—

1. The collection of useful information, whether speculative or practical, through original essays or reports of provincial hospitals, infirmaries, or dispensaries, or of private practice.

2. Increase of knowledge of the medical topography of England, through statistical, meteorological, geological, and botanical inquiries.

3. Investigation of the modifications of endemic and epidemic diseases, in different situations and at various periods, thus to trace, so far as the present imperfect state of the art will permit, their connexions with peculiarities of soil or climate, or with the localities, habits, or occupations of the people.

4. Advancement of medico-legal science, through succinct reports of whatever cases may occur in the provincial courts of judicature.

5. Maintenance of the honour and respectability of the profession, generally, in the provinces, by promoting the friendly intercourse and free communication of its members.

WAKLEY, in commenting on the scheme, described it as "masculine and comprehensive." He went on to say : "It lays a foundation for the congenial union of scientific research and professional honour, and addressed as it is to provincial practitioners—not by any means the least independent or least skilful members of the profession, who can doubt of its success, or, observing it, can fail to desire that its benevolent and intellectual promoters may live to witness this excellent example taken up and followed throughout the whole of the British dominions?"

The meeting marked the culmination of Sir CHARLES HASTINGS's whole-hearted efforts to unite the medical profession on a basis of scientific research. His first substantial act towards this end had been to found the *Midland Medical and Surgical Reporter*, a quarterly journal for collecting and utilising the valuable clinical material of the provincial hospitals. The new venture was the reaction of HASTINGS and his friends to the destruction of their journal through the failure of its printers and publishers. The meeting was duly held in the board-room of Worcester Infirmary, and was a great success. HASTINGS delivered a splendid address setting out practical proposals which were enthusiastically adopted. The meeting marked the birth of the Provincial Medical and Surgical Association, with 310 members from all over the country. The objects which these members had before their eyes at that moment were, first and foremost, the pooling of scientific observation and knowledge ; contact with medicine in foreign countries ; the study of disease in the community ; medico-legal science ; and the formation of a code of medical ethics. There was no idea that the Association should concern itself with medico-political matters or the qualification of medical practitioners ; the first Medical Act still lay 26 years in the future. These then were the ideals of the new Association. It was emphatically and proudly a provincial body ; it had arisen largely through the desire of provincial practitioners to assert themselves against the preponderance of London medical institutions and the pretensions of those who ran them. The president was, therefore, a senior physician or surgeon in one of the provincial towns within the circle of the Association, and the secretaries lived in Worcester, whence they superintended the publication of the *Transactions*. The first great change in the outlook of the new body occurred when its centre of gravity was shifted to London by the irresistible pull of the metropolis. In 1854 the *Journal*—the new name for the *Transactions*—was moved to London ; at the annual meeting at York in 1855 there was a lively discussion but a proposal to change the name of the Association was defeated ; the representation was improved but not to the satisfaction of a large number of members who did not attend. At a special meeting held in the autumn of the same year the name was changed to British Medical Association and sweeping changes were made in the constitution of the council. The further history of the Association—its work at the formation of the General Medical Council and the passing of the Act of 1886, its influence on the administration of the poor-law and the development of State medicine, to mention only a few of its adventures—is a record of strenuous and ever-widening service to the profession and the public. It is being ably written by Mr. E. MUIRHEAD LITTLE for the festival which is to be celebrated in London and at Worcester, the "faithful city" of HASTINGS, next month.

In this centenary year the annual representative meeting will be held as in 1930 at the headquarters building in London, but it will be the first year in which the beautiful Lutyens house in Tavistock-square has served the larger purposes of an annual meeting. This house, which was opened by the KING in 1925, with its memorial gates dedicated by the Archbishop of CANTERBURY, provides a worthy home for the activities of a great professional organisation. For its acquirement the Association is largely indebted to the statesmanship of Sir ROBERT BOLAM, then chairman of council. But even this house will not contain the centenary meeting, and Lord DAWSON OF PENN, the incoming President, will deliver his address at the Queen's Hall, Langham-place, while the centenary dinner will be held at the Albert Hall, on a scale much larger than any gathering that the Association has yet convened. A special pilgrimage to Worcester is being organised, and two memorials to the founder will be unveiled. The number and scope of the scientific sections

is much greater than in ordinary years, as is fitting in a society founded originally to advance the science of medicine. It is interesting that forensic medicine, so little honoured in this country, is to have one whole morning given up to it by a special section. This step at least indicates that the study of medico-legal science, one of the Association's first objects, has not retrogressed in the last hundred years. We rejoice at the honour done to the Association in the knighthood conferred on Sir HENRY BRACKENBURY, the present chairman of council, who, in the intervals of a busy general practice, has done as much for the advancement of the Association as any man in its history. Heartfelt regret is felt at the retirement of Dr. ALFRED COX after 25 years' service as medical secretary, in which he has frequently been single-handed representative and champion of the Association before principalities and powers.

WILHELM OSTWALD

OF the four great men who created the subject of classical physical chemistry—Van't Hoff, Arrhenius, Ostwald, and Nernst—only Nernst now survives. Van't Hoff died in 1911, Arrhenius in 1927, and now Ostwald has gone, having died on April 4th in his 79th year. Born at Riga in 1853, the son of a master cooper, WILHELM OSTWALD entered the University of Dorpat in 1872. Here he obtained the degree of *Philosophiae doctor* in 1878 and the post of lecturer. In 1881 he was called to the chair of chemistry in the Polytechnic at Riga, in 1887 to the special chair of physical chemistry in the University of Leipzig. He remained at Leipzig until his retirement from University life in 1905 at the comparatively early age of 52. The rest of his life (nearly 27 years) was spent at a pleasant house in the country, which he named "Landhaus Energie," in the neighbourhood of Grossbothen in Saxony.

OSTWALD'S earliest scientific work was directed to the determination of the relative strengths ("affinities") of acids and bases by physical methods which did not interfere with the equilibrium state of the chemical system. For this purpose Julius Thomsen in Copenhagen had used the measurement of the heat evolved on mixing the interacting solutions, whilst J. H. Gladstone in England had employed measurements of light absorption. OSTWALD greatly extended this line of investigation by measuring the densities and refractivities of the solutions. He then took the important forward step of correlating the results obtained by these "statical" equilibrium methods with the results obtained by "kinetic" methods—e.g., the various effects of different acids in catalysing the rate of hydrolysis of esters (such as methyl acetate) in aqueous solution. A yet greater step was the discovery that the relative strengths or affinities of acids in aqueous solution, as determined by these various methods, ran parallel to their electrical conductivities, in aqueous solution, as measured by the alternating current method of Kohlrausch. Arrived at this result, OSTWALD at once perceived the importance of Arrhenius's theory of electrolytic dissociation—ionisation in solution, especially aqueous solution—and discovered his famous "Dilution Law," which showed that the variation with dilution of the degree of ionisation of a "weak" acid or base in aqueous solution, as determined by the electrical method of Arrhenius, could be described by the law of chemical equilibrium. This discovery lent great support to the explanation which the theory of Arrhenius gave of the anomalous osmotic effects which Van't Hoff had observed in aqueous solutions of many electrolytes. OSTWALD soon became the great protagonist of the new ionisation theory, and he and his numerous pupils published long series of researches in this field, many of these throwing a new light on the electric potential differences existing between metals and solutions of their salts. The theory of chemical reaction velocity in solution was greatly developed and extended, whilst investigations of this nature led OSTWALD to the last great series of researches at Leipzig—namely, those on catalytic action. This was always a subject very close to his heart.

The discoveries of OSTWALD and his school have had a profound influence on physiology and medicine. The many effects produced by salts, acids, and bases in blood and lymph and in the interiors of cells and organs are largely due to the ions and are concerned with ionic equilibria. The fundamental actions of enzymes are catalytic actions, and the operations of these enzymes are largely controlled by the hydrogen-ion concentration. Life is a process requiring for its balance and poise a very delicate regulation of coördinated ionic concentrations and ionic equilibria, whilst an understanding of the coördinated flux of metabolism requires a profound knowledge of the laws of chemical reaction velocity. Classical physical chemistry, the science of which WILHELM OSTWALD was the eminent organiser and one of the chief founders, is one of the pillars on which the great structure of modern physiology and medicine rests to-day.

INSTRUCTION IN OPHTHALMIA NEONATORUM

OF all the causes of blindness in childhood and youth there is no doubt that gonococcal infection of the conjunctiva at birth still takes a chief place. The proportion on the roll of the London County Council blind schools last year with blindness due to this cause was 45 out of 218, or about 20 per cent. At the Swiss Cottage school for the blind five years ago the proportion for past and present pupils was 57 out of 255—substantially the same percentage. But now some improvement appears to have begun, for according to Mr. M. S. MAYOU, although the number of cases of ophthalmia neonatorum notified in London has not diminished during the last 15 years, the number that end in blindness has decreased to less than one half. It may be fair to infer that the larger proportion of cures is due to more efficient care. By far the most important part of treatment consists

in frequent irrigation of the eyes during the acute stage, the frequency being based upon the amount of discharge. To secure this it is in most cases desirable for the infant to be admitted without delay to a hospital, and since the disease begins during the first few days of life, it is necessary for the mother to be admitted also. The problem presents obvious difficulties, but they have been overcome in some institutions, notably (from 1908) at St. Paul's Eye Hospital, Liverpool, and in London at St. Margaret's Hospital, an institution set aside by the L.C.C. for this purpose. Since this was opened in 1918 it has been utilised to an increasing extent, so that, in 1930, out of 617 notified cases in London, 196 were admitted to the hospital. The chief difficulty is that the patients are not sent in early enough. When St. Margaret's was first opened the average age at which the infant was admitted was three weeks, and although there has been improvement since, there is still too large a proportion of cases admitted with corneal ulceration. Mr. MAYOU complains that it is difficult to get midwives to realise that the mother and infant can be moved safely by means of an ambulance on the third or fourth day after the birth of the child. Another hindrance to serious treatment is the difficulty found by the practitioner, especially if newly qualified, in gaining experience of the subject. The medical student may go through his whole course of training without seeing a case. It was this that led the Council of British Ophthalmologists some years ago to petition the General Medical Council in the following way:

That it should be made compulsory for all students to attend once at least one of the ophthalmia neonatorum centres for practical instruction in the management and treatment of these cases, the most convenient time in the curriculum being during attendance at the course on fevers.

The matter came before the Council again at its recent summer session as we noted last week (p. 1272), when Mr. BISHOP HARMAN remarked that at the West London Hospital, where formerly numbers of these cases were received, now there was not one a year. Mr. H. L. EASON, who had a similar tale to tell from Guy's, agreed that no teaching was adequate unless the students saw the disease itself. The extern maternity work of general hospitals is now, he said, so well run that cases of ophthalmia neonatorum are never seen. Unfortunately the dearth of cases seen by students is not due to its general rarity. About 100 cases are notified week by week in England and Wales. What must be done is to bring the student and the disease together. The General Medical Council decided not to lay down a hard-and-fast rule applicable to all medical schools, but the opinion was expressed that it is the business of the teacher in the ophthalmological clinic to make the necessary arrangements for his pupils to see these cases. Obviously facilities must vary locally. The essential matter is that in all medical schools they should exist.

ANNOTATIONS

MENTAL DEFICIENCY AND STERILISATION

THE Wood Committee estimated the number of mentally defective persons, including children, in Great Britain as about 300,000, and of these we know, from the Minister of Health, that 97,310 were last New Year actually "ascertained" by local authorities, and 33,356 under guardianship or in institutions. Several times during this and last Parliamentary session the Minister has been asked if he was prepared to investigate the question of the sterilisation of the unfit and, if found desirable, to introduce legislation to eradicate the evil; and on Feb. 15th the Parliamentary secretary announced the Minister's intention to arrange for a preliminary investigation of the scientific issues involved as the first step towards a full and authoritative inquiry into the problems of mental deficiency, in which sterilisation is only one of several inter-related questions. It is now announced that the Board of Control, with the approval of the Minister, have appointed a committee constituted as follows:—

Mr. L. G. BROCK, chairman of the Board of Control (chairman).
Mr. WILFRED TROTTER, M.S., F.R.S., surgeon to University College Hospital; member of the Medical Research Council.
Mr. R. A. FISHER, Sc.D., F.R.S., of the Statistical Dept., Rothamsted Experimental Station.
Dr. A. F. TREDGOLD, F.R.C.P., associate physician in psychological medicine, University College Hospital.
Miss RUTH DARWIN, commissioner of the Board of Control.
Dr. E. W. ADAMS, medical officer, Ministry of Health.
Dr. R. H. CROWLEY, F.R.C.P., senior medical officer, Board of Education.
Dr. E. O. LEWIS, D.Sc., commissioner of the Board of Control.
Mr. F. Chanter of the Board of Control will act as Secretary.

The terms of reference are "to examine and report on the information already available regarding the hereditary transmission and other causes of mental disorder and deficiency; to consider the value of sterilisation as a preventive measure having regard to its physical, psychological, and social effects and to the experience of legislation in other countries permitting it; and to suggest what further inquiries might usefully be undertaken in this connexion."

THE TONSILS AND PHYSIQUE

IT is generally accepted that many of the arguments put forward in favour of the removal of tonsils are to-day in need of critical examination. A paper by Dr. Ruby L. Cunningham [1] gives an account of an attempt to measure some of the effects of the operation by a study of the histories and physical measurements of young women entering the University of California from 1920 to 1929. The histories she dealt with in a previous paper,[2] but the present comparison of physical measurements and menstrual experiences should, in some ways, carry more conviction, since histories are liable to be faulty through defective interpretation and memory, an error from which the present data are free. From consideration of the histories it was concluded that the contention that normal tonsils are an aid in resisting disease was not supported, while, per contra, there was no evidence in favour of the belief that their removal closes a portal of entry for infectious and respiratory

[1] Arch. Int. Med., March, 1932, p. 453.
[2] Ibid., 1931, xlvii., 513.

diseases. The present study adds that the condition of the tonsils—whether normal, absent, or pathological—has little effect on the physical condition of these young women of college age, from 15 to 35 years. For example no significant relationship was found between the tonsillar condition and the proportion of women with enlarged cervical glands (about 20 per cent. in each group), or between the tonsillar and the menstrual conditions as judged by the mean duration of menstruation, the amount of pain, the amount of flow, and the amount of irregularity. The incidence of aural and dental conditions showed no variation. There is a suggestion that those with pathological tonsils include a larger number with thyroid glands showing adolescent enlargement, and that those whose tonsils had been removed attained a slightly greater mean height (only one-tenth to one-fifth of an inch). The most perfect nasal structures were, naturally enough, found in the group with normal tonsils, but, on the other hand, those with pathological tonsils had on the average better vision and fewer ocular defects and their mean weight was somewhat greater. Those whose tonsils had been removed had somewhat less acne than those with normal tonsils—a slight difference but one that is statistically significant. Obviously the difficulty mainly lies in the interpretation of such differences, for it is impossible to detect what basis of selection, in the past, determined whether tonsils should be removed or not. No doubt a part is played by such factors as heredity, place of residence, past health history, standards of living and attitude towards medical care. Unless the groups are initially equal the effect of the removal or non-removal cannot be clearly determined. At least it can be said that no broad differences are to be observed in this study, and the effect of normal tonsils in augmenting growth, or of diseased tonsils in retarding development, is not apparent.

It is possible that in this country a regional study might confirm these findings. In some counties, notably in Derbyshire, the proportion of school-children referred for treatment is much higher than in others. In the five years 1926 to 1930, the figures for Derbyshire were 89·8, 113·8, 118·7, 143·7, and 140·2, per 1000 routine inspections, the corresponding figures for England and Wales being 54·6, 60·9, 63·0, 66·8, and 66·5. The operation-rate for 1931 in Derbyshire is 3·5 per cent. Dr. W. M. Ash, in the annual report which we noticed last week, says that he has been unable to satisfy himself that many of the conditions for which tonsillectomy is advised are in any way benefited by the operation. In a large group of children he found that the ordinary respiratory troubles of the larynx, bronchi, and lungs were not less frequent in children whose tonsils and adenoids had been removed, nor was the incidence of the common infectious diseases affected with the possible exception of diphtheria. Little improvement in nutrition was noticed and improvement was recorded only in those children whose symptoms had been mouth-breathing, colds in the head, sore-throat, and otitis. His second indictment—that the operation is no trivial one and that post-operative complications though not common are often alarming—has less force, since of his list of sequelæ some could not fairly be attributed to the operation, and some would be less likely to occur in areas where facilities for in-patient treatment are provided. Dr. Ash has now taken the practical step of instructing his assistants to divide cases of enlarged tonsils and adenoids into two groups. Those classified as not urgently requiring operation are to be given advice on diet, with especial reference to vitamins A and D, taught to breathe properly, and treated for any septic dental conditions; they are to be re-examined not less than six months later. As a result of this alteration in procedure the proportion of cases referred for treatment fell to 83·1 per 1000 routine inspections in 1931, though the scheme had only been in operation for six months of that year. This conservative tendency is in accord with the scepticism about the value of indiscriminate tonsillectomy which studies such as that of Dr. Cunningham serve to strengthen.

EXPERIMENTAL CANCER

THE report of the Yorkshire Council of the British Empire Cancer Campaign for 1931–1932 contains accounts of the experimental work carried out in the two centres, Leeds and Sheffield. Dr. J. S. Young summarises the results of his experiments on the production of epithelial hyperplasia in the lungs of rabbits by stating that the equilibrium of the resting epithelial cell is less susceptible to disturbance by an alkaline medium than by an acid one. In both cases, however, a very gross interference is essential before an epithelial reaction begins, greatly exceeding any change of the kind which might be expected to occur under natural conditions. Dr. Berenblum has continued and confirmed his investigations on the anticarcinogenic action of mustard gas and allied substances. In view of the misleading interpretation which has been given to the term "anticarcinogenic action," it may be pointed out that it describes the local inhibition of the development of tar cancer when these anticarcinogenic substances are applied alternately with tar to a circumscribed skin area. The phenomenon, interesting as it is from a theoretical point of view, has, therefore, at present no practical application.

The factor of susceptibility to carcinogenesis, the importance of which has recently been recognised, has been studied by breeding from mice which develop tar cancer at an early stage and then comparing the rate and frequency with which the offspring of such mice develop tar cancer in comparison with the ordinary laboratory stock. The results obtained so far indicate that mice bred from parents with early tar tumour develop tar warts sooner than the stock-bred mice. The report of Prof. E. Mellanby from the Sheffield centre deals mainly with the work of Mr. A. F. Watson, Ph.D. He has obtained a highly carcinogenic synthetic tar by subjecting purified turpentine to a temperature of 850° C. and subsequent steam distillation of the product. The tar obtained in this way appears to be an agent of extraordinarily high carcinogenic potency, not only for mice and rabbits, but also for rats, which have so far proved very resistant to the experimental production of skin cancer. In experiments on the effects of different diets on the development of tar cancer it was found as a general rule that the development and growth of tar cancer was most active in animals kept on diets which improved the general condition of the animals, and was conversely least active in animals kept on diets which adversely affected this general condition. Apart from this, no specific relation between the addition of different foodstuffs to a basal ration and the development of tar cancer could be established, except in one instance. The addition of fresh liver definitely accelerated the development of tar cancer in mice. This effect was observed only with fresh ox livers and not with frozen or chilled livers. Lean beef muscle and ox spleen had no accelerating effect. These

interesting results confirm some earlier observations recorded by Prof. Maisin, of Louvain, but Dr. Watson's experiments have been carried out on a much larger scale and have also revealed certain fallacies which may have prevented other workers from confirming Maisin's observations.

The Yorkshire Council is to be congratulated on the activity and scientific soundness with which the investigation of cancer is carried on in their research centres.

THE STUDY OF TUBERCULOSIS BY GENERATIONS

IN the early 'nineties of last century Dr. K. F. Andvord launched his then revolutionary theory that the fatal tuberculosis of adult life is usually contracted in early childhood. Since then he has been tireless in exploring the epidemiology of tuberculosis, mainly on statistical lines, and his latest publication [1] raises many questions to which he finds stimulating counter-questions rather than cut-and-dried answers. His main thesis is that tuberculosis is a "generational" disease, and that once the degree of infection is known in a given age—say the first five years of life—then the fate of this generation, as far as its future tuberculosis mortality is concerned, can be forecast for the rest of its life.[2] According to this doctrine of morbid predestination, which is, after all, merely an expansion of the teaching that the tuberculosis of adult life is contracted in childhood, the first effects of any successful campaign against tuberculosis will be noted only in the youngest generations; the fate of the older generations has already been sealed. Only after preventive measures have been enforced for, say, a score of years will a generation in its twenties show a lowered tuberculosis mortality. With regard to the primary infections occurring in adult life, Dr. Andvord makes some curious and inexplicable comparisons between the three Scandinavian countries. In Denmark, Pirquet tests have hardly ever shown clinical manifestations of tuberculosis in recruits whose reaction changed from negative to positive during military service. In Sweden, barely 4 per cent. of recruits in this category have shown clinical signs of tuberculosis during the transition from a negative to a positive reaction. But in Norway some 8 to 10 per cent. of probationer nurses celebrate their passage from the ranks of the negative reactors to those of the positive reactors by falling ill. In other words, the adult Dane shows no other response to his first infection with tuberculosis than a positive Pirquet reaction, while a goodly proportion of Norwegians coming into contact with tuberculosis for the first time in adult life supplement their newly acquired positive reactions with serious and clinically demonstrable signs of tuberculosis. If the generation born in the period 1900–1905 in the three Scandinavian countries be followed into their twenties, similar marked differences will be found. In the period 1920–1925 this generation had a tuberculosis mortality of 42·8 per 10,000 in Norway. The corresponding figure for Sweden was only 27·1 and for Denmark it was down to 14·9. Considering how much the Scandinavian countries have in common, it is amazing that in one and the same generation the tuberculosis mortality should be approximately three times higher in Norway than in Denmark. Within her own boundaries, Norway shows striking differences in her tuberculosis mortality, that of the far north being twice that of the south of Norway. The still Pirquet-negative adult native of the north of Norway faces tragedy at his first exposure to tuberculosis, and Dr. Andvord abandons his theory of childhood infection to the extent of estimating 25 to 30 per cent. of all the deaths from tuberculosis in the north of Norway as being sequels to primary infections in adult life. On the other hand, the adult Pirquet-negative Dane seems to escape when he encounters tuberculosis for the first time. Faced by these apparent contradictions, Dr. Andvord is driven to the conclusion that "the Pirquet reaction tells us only whether a person is infected or not with tuberculosis; but it tells us little or nothing about susceptibility, prognosis, and the clinical course of a case, for with the same Pirquet reaction one may encounter the greatest contradictions in the course of the disease and its prognosis."

[1] Norsk Mag. f. Laegevid., May, 1932.
[2] See THE LANCET, 1930, ii., 146.

ATROPHIC ARTHRITIS AND ITS RELATIONS

ANY effort to clarify ideas about arthritis is welcome, and some really valuable statistical work, treating each aspect of the disease separately, has been undertaken by Dr. Millard Smith at the University Hospital, Ann Arbor, Michigan. The present material is obtained from the first 102 cases of a total series of 612. They have been observed over a period of three years, and the results are recorded in three consecutive papers.[1] The study mainly concerns the "non-articular" aspect of so-called atrophic arthritis on the generally accepted principle that the joint changes are only a manifestation of a profound physiological disturbance involving the autonomic nervous system, the vascular system, and the smooth musculature. Millard Smith begins with a classification of arthropathies. It seems unfortunate that we should be burdened with yet another classification but, as he says, nearly every writer uses a different nomenclature and it is essential that he should make it clear which he has adopted. The first or introductory paper proceeds along the following lines: distribution of cases by sex, incidence by age-groups, habitus, complexion, occupation and social status, distribution of sub-types of atrophic arthritis at the onset of the disease and when last seen, with a further study of the changes in the type of the arthritis at the onset and when finally observed; it ends with a study of the blood and the basal metabolism. Much of this has been done before, and nothing strikingly different from previous observations emerges; its value lies chiefly in confirming views already held. The second paper deals with constitutional defects. Millard Smith points out how unfortunate it is that the theory of focal infection has blinded observers to physiological deviations from the normal and consequently the constitutional aspect of the disease. He emphasises R. L. Jones's accurate clinical account of the condition by reporting similar findings in this group of 102 cases, thereby paving the way to a more liberal theory of the disease than that based on the limited one of joint infection. He lays stress especially on the regular prodromal period and its constitutional signs, which prevail and become exacerbated in the arthritic stage. He finds the disease has strong familial tendencies and the data on the allergic traits suggest an abnormal reactibility common to a significant number of patients. Allergic manifestations are evidence of a peculiar reactibility on the part of the autonomic nervous system, the vascular system, the smooth muscle system, and Millard Smith demonstrates by a

[1] New Eng. Jour. Med., 1932, ccvi., 103, 160, 211.

study of the prodromal symptoms and signs and the constitutional symptoms and signs after the disease has become arthritic, that it is these very systems that appear, strikingly enough, to be involved. The difference is that in the allergic state there is an autonomic imbalance in favour of the parasympathetic division, and in atrophic arthritis an imbalance in favour of the sympathetic division. Since the two states are incompatible in the same tissue at a given time an explanation is forthcoming for the reciprocal relation of allergy to the disease. He concludes his second paper by saying that atrophic arthritis should be thought of as a neurovascular disease and certainly not as an infectious arthritis. The third and last paper is devoted to ætiology. It is shown that physical and emotional trauma occurs with sufficient frequency in these cases to be considered seriously as having an ætiological rôle. Even in connexion with so-called menopausal arthritis it appears that focal infection and emotional and physical trauma play an important part.

These three papers should certainly fulfil their object—namely, to add momentum to an increasing interest in "non-articular" aspects of atrophic arthritis.

EXPERIMENTAL RENAL FAILURE

THE physician interested in nephritis has long been confronted with a problem of great importance. Can the rise of blood pressure observed in many cases of Bright's disease be properly considered secondary to the renal lesion; or is it not rather evidence that the renal vessels have undergone severe change parallel with independent change in others of the smaller blood-vessels? Should not arterial hypertension be interpreted as a sign that the renal lesion is secondary to a vascular defect?

The first important work on this problem was the classical series of experiments by Sir John Rose Bradford in 1899. He showed that removal of two-thirds of the total kidney tissue in animals caused polyuria, and that removal of three-quarters of it caused polyuria with an increase in the total urea excretion, but with nitrogen retention; cardiac hypertrophy was not produced. Subsequent investigations have often given conflicting results; thus Janeway, Cash, and others claimed to have produced some degree of arterial hypertension by various methods of partial renal destruction, whereas Anderson and others failed to get such effects. In view of this conflict of evidence it is of interest to read of a study by A. Chanutin and E. B. Ferris,[1] who have carried out some careful experiments, with ample controls, on rats. Their method was to remove half to three-quarters of one kidney, and, after a week's interval, the whole of the other kidney. The usual laboratory methods for examining the blood and urine were employed and the diet was elaborately regulated. Estimation of blood pressure proved difficult, and finally the observers were obliged to have recourse to direct estimation of the pressure by introducing a cannula into the carotid artery just before killing the animal. Large numbers of control animals were employed so as to determine the constancy or otherwise of apparent deviations in the experimental animals. Definite nitrogen retention and pronounced polyuria were observed during the first few days after completion of the operative measures, but the volume of urine diminished within a fortnight. After this time the degree of nitrogen retention and polyuria were found to depend on the extent of renal damage. Animals killed at intervals were found to show renal hypertrophy after the second week; hypertension in this early stage was noted in only one case and probably cannot be considered significant. The observations were then carried out on a large group of animals in apparently good health at a period of more than six weeks after completion of the operations on the kidney; all animals with pulmonary disease and anæmia were excluded from the series. It was found that retention of 50 to 197 mg. of non-protein nitrogen was present. In all cases where renal insufficiency was marked there was a notable elevation of the blood pressure, although this could not be shown to run strictly parallel in all cases to the degree of renal failure; in other words the degree of nitrogen retention could not be used as a criterion for the prediction of hypertension. Definite thickening of the left ventricle was often present. A special study was made of a group of partially nephrectomised animals, which had moderate anæmia although their health seemed otherwise good. The renal damage in these cases was shown to produce polyuria with urine of a constant low specific gravity. A few of these rats showed no hypertension and in the rest there was again no close relation between the degree of hypertension and of nitrogen retention. All animals which were in any way severely ill were excluded when reaching these conclusions.

Commenting on these findings Chanutin and Ferris say that they think the polyuria depended to a great extent on the hypertension, and are inclined to support the postulate of Verney that such hypertension represents a protective mechanism designed to increase the work of the residual glomeruli. Amongst the negative findings in this series of observations it should be noted that œdema was never produced.

[1] Arch. Int. Med., May, 1932, p. 767.

PSYCHOLOGICAL FACTORS IN PERIPHERAL VISION [1]

A PIECE of research designed to investigate the physiological and psychological components in peripheral vision has important bearings on everyday problems. Central rather than retinal processes were investigated, the method being the exposure of many different figures by a specially designed tachistoscopic apparatus which allowed for the perception on the periphery of the field at various meridians. The results showed that perceptual accuracy diminished with increase of eccentric angle of exposure of the forms. Larger forms are more easily perceived than smaller ones. Increased eccentric exposure makes objects appear less bright and smaller under the experimental conditions. Reports are influenced by past experiences of the observer in the experimental procedure. Time exposure increases accuracy in recognition, and simultaneous exposure of other objects in other fields diminishes accuracy. There is also a tendency to under-estimate the eccentric angle of exposure and this effect persists even when the form is exposed near a fixed and continuously illuminated reference mark. It is found difficult to separate physical, retinal, and central components.

The inquiry is really an extension of work done on retinal stimulation in eels by Adrian and Matthews, who found that retinal excitation in one area led to a reinforcement of action and of excitation in another. In some of these human experiments, however, mutual inhibition was found to occur when two fields were

[1] By G. C. Grindley, Ph.D. Medical Research Council Special Report Series No. 163. London: H.M. Stationery Office. 1932. Pp. 49. 1s.

simultaneously excited. Myers Salaman's observation, as is here recalled, showed that both inhibition and reinforcement took place. The most likely explanation is the existence of two levels of activity in perception—a retinal excitatory and a central inhibitory process.

THE RE-ALLOCATION OF RADIUM

CHANGES in the distribution of the 10 grammes of radium acquired by the King Edward's Hospital Fund for London are recorded in the report of their distribution committee, which was presented at the annual meeting on June 7th. In the course of 1931 the authorities of St. Mark's Hospital for Diseases of the Rectum found that the number of their cases suitable for treatment with radium had decreased, and were therefore able to return the 100 mg. lent them by the Fund. Pending re-allocation this radium has been in temporary use at other hospitals. In June, 1931, the Westminster Hospital submitted a report by its radium staff which described the results obtained by the use of the 4-gramme bomb as being so discouraging as not to justify the hospital in financing the undertaking further. This bomb had been acquired by the Fund in exchange for an equal quantity of radium to be used by the National Radium Commission outside London, part of the arrangement with the Commission being that the hospital should continue the scheme of radium therapy agreed between the hospital and the Commission. The King's Fund interviewed the representatives of the hospital, and ascertained that the Commission, having considered the hospital's report of the results of the use of the bomb, were unanimous in recommending its division into four units of 1 g. each, to be allocated to separate hospitals for surface therapy. After many discussions and conferences, the recommendation of the Commission was accepted in principle by the distribution committee, and the four 1-gramme units were allocated one each to the Cancer (Free), the Middlesex, University College, and Westminster Hospitals, and the 100 mg. returned by St. Mark's to Guy's Hospital.

TREATMENT OF PARKINSONISM BY TRYPAN-BLUE

A FEW years ago three French workers reported definite improvement in one case and doubtful results in two others from the use of trypan-blue in the treatment of the parkinsonian sequelæ of encephalitis lethargica. Laignel-Lavastine and Jean Sterne [1] have now used this remedy in 15 cases which had not benefited appreciably by the ordinary measures. They state that none but the purest trypan-blue is of any value; as it is accumulated and not eliminated, it must be given in weak doses well spaced out, but it maintains its action. They claim that its action is more than symptomatic. They use a 1 per cent. solution in water and the course is as follows: two injections of 1 c.cm. each, followed by three or four injections of 2 c.cm., the interval between each two injections being three or four days. An interval of a month is allowed between courses. The solution is injected intravenously, but no harm is done if any of it is accidentally injected into the tissues. There is usually a slight reaction with vasodilatation in the face, cough, slight tachycardia and rise of blood pressure, and an accentuation of tremor; this lasts for a few minutes and is succeeded by a short period of vasoconstriction, after which the patient returns to a normal condition. No ill-effects of any kind have been observed, and the injections have been well tolerated even by very exhausted patients. The authors stop when they observe a bluish tinge of the conjunctiva and integument; they do not agree that this colour goes side by side with the therapeutic effect. A transitory improvement is sometimes observed after a few injections. Sometimes permanent improvement makes its appearance early; sometimes it is tardy; in one case the treatment was continued for two years—largely to please the patient—and the improvement took place suddenly. Recent cases are found to be more susceptible to treatment than advanced ones, but even the latter sometimes give good results. The symptom which seems to be most affected is the muscular rigidity; one patient who could only swallow liquid was able to take bread, and another was able to recommence wood-carving. In the best cases there is a great diminution in neurological signs. The tremor is much less influenced, but it is sometimes possible to reduce or even to dispense with scopolamine. The eye symptoms apparently do not improve, but the mental dullness is reduced. In the evolutionary forms with somnolence, clonic spasm, and loss of control over salivation, Laignel-Lavastine and Sterne claim a diminution in the symptoms.

[1] Bull. et mém. Soc. méd. hôp. de Paris, May 23rd, p. 689.

Dr. Robert J. Rowlette has been elected president of the Irish Medical Association.

WE regret to announce the death of Prof. Leith Murray, professor of obstetrics and gynæcology in the University of Liverpool, which occurred on Saturday last, June 11th, in the 53rd year of his age. His sudden death is a loss not only to the City and University of Liverpool, but to a very wide circle of friends.

THE annual elections at the Royal College of Surgeons in Ireland were held last week. Mr. Frank Chetwode Crawley, vice-president, was elected president, and Mr. Seton Pringle, vice-president. Mr. Crawley is ophthalmic surgeon to the Royal City of Dublin Hospital, and one of the surgeons to the Royal Victoria Eye and Ear Hospital. Mr. Pringle is surgeon to the Royal City of Dublin Hospital and to Drumcondra Hospital.

BRITISH MEDICAL ASSOCIATION: MIDDLEMORE PRIZE, 1933.—The Middlemore prize, consisting of a cheque for £50 and an illuminated certificate, and founded in 1880 by the late Mr. Richard Middlemore, of Birmingham, is awarded annually for the best essay or work on any subject which the council of the British Medical Association may from time to time select in any department of ophthalmic medicine or surgery. The council of the Association will consider an award of the prize in the year 1933 to the author of the best essay on the treatment of glaucoma. Essays must reach the Medical Secretary, B.M.A. House, Tavistock-square, London, W.C.1, on or before Dec. 31st, 1932, signed with a motto only and accompanied by a sealed envelope marked on the outside with the motto and containing the name and address of the author.

A Voyage d'Études Médicales to the watering-places of France will take place this year in Central France from Sept. 8th to 19th inclusive, under the conduct of Prof. Maurice Villaret and Dr. Etienne Chabrol. The party will assemble on Sept. 8th at Pougues. The principal places to be visited are St. Honoré-les-Bains, Néris-les-Bains, La Bourboule, Mont Dore, St. Nectaire, Royat, Châtel-Guyon, Vichy. Further information may be had from Madame Juppé-Blaise, Federation of the Health Resorts of France, Tavistock House (North), Tavistock-square, London, W.C.1.

SPECIAL ARTICLES

WHAT IS WRONG WITH THE MEDICAL CURRICULUM?

(A Series of Opinions Contributed by Request)

II

By RALPH M. F. PICKEN, M.B., B.Sc., D.P.H.

MEDICAL OFFICER OF HEALTH FOR CARDIFF; LECTURER IN PUBLIC HEALTH AT THE WELSH NATIONAL SCHOOL OF MEDICINE

ALTHOUGH I am assuming that any criticism of mine of the medical curriculum will be of interest mainly in relation to the teaching of preventive medicine, I cannot refrain from mentioning that certain general features of the output of the medical schools are inevitably impressed upon the minds of those who, like myself, are passing through their hands a considerable number of post-graduate students and assistant medical officers. Personally, I am not very much concerned as to whether the men and women who come on to my staff have a great deal of knowledge. As a matter of fact, they have often an astonishing accumulation of smatterings of information. But, when that information relates to my own special line of work, I find that much of it is already obsolete, and I conjecture that the same is true of some of the items of information they have collected about other branches of medicine. On the technical and manipulative side they appear to be quite good, and it seems to me to be right that the schools should concentrate upon making them so; for it is hard to acquire technique from the study of literature in the isolation of post-graduate practice. But the other things which they ought to have acquired—initiative, resourcefulness and, above all, capacity to go on learning and unlearning—I find singularly lacking, and I do not admit that such things cannot be taught. Especially in our branch of medicine, where the temptation to make pronouncements is great, scientific scepticism and a suspension of judgment which is not mere hedging are much to be desired. It is hard to compare immeasurables of the present with the past, but my impression is that deficiency in these respects is at least as great now as it was when I graduated and perhaps greater than in the student days of my teachers. Probably the much better organisation of medical teaching nowadays is offset by the admitted overloading of the curriculum.

I note with some concern that there are still medical men who worship at the shrine of the "single portal," which would force all our teaching into moulds created by anonymous examiners and still further encourage the mental accumulation of facts. I do not wish to see any reform of the curriculum which would magnify the importance of ordeal by examination. Although I have a profound faith in the future of preventive medicine, I do not desire to be a party to any further burdening of the student mind with specialised knowledge of my own kind. But as we have found no practical substitute for the examination system we should at least try to make it more reasonable and effective.

A REVOLUTION IN OUTLOOK

Apart from these general considerations, we of the public health service are interested in the teaching of medicine in all its branches because successful public health work entails familiarity with many aspects of medicine and of medical practice and outlook which cannot be described strictly as preventive. While it is desirable that public health officers should be administrators with a scientific bent, it is also essential that those whose daily work includes the care of patients in council hospitals of various kinds or the holding of out-patient consultations under school medical, maternity, child-welfare, tuberculosis, or venereal diseases schemes, should be sound clinicians. The public health official is a practitioner of medicine, practising his art sometimes directly upon his patients, sometimes on the public in groups. His success depends on many things, but always, in the last instance, upon his knowledge of medicine. His peculiar interest should be to get behind the manifestations of diseases to its origins, to watch for the weakest link in the chain of causes and to lead the attack upon it. He finds himself in agreement both with the layman's view that prevention should take the place of cure, and with the contention of his professional colleagues that preventive and curative medicine cannot be separated from one another; but he thinks that medical teaching and medical practice still tend to lay all the stress upon cure, and that almost a revolution in the outlook of some of the teaching bodies will be required before there is prospect of the young graduate fledging with a conception of the paramount importance of prevention even as clear as the average man in the street has.

The practitioner of preventive medicine is not blind to the fact that there is a very good reason why the teachers of medicine, surgery, and obstetrics who have the students in their final years, tend to be perfunctory in their references to prevention. He knows that the practical demand upon the medical profession is mainly for treatment and that even within the public health departments this demand has to be met. Moreover, the clinical manifestations of a particular disease affecting an individual are even now, though much less than formerly, such that one mind can apprehend them and control the application of the appropriate remedies. On the other hand, public health measures have been, even more in the past than now, questions of large scale organisation, like the provision of isolation hospitals, or engineering works, such as the installation of waterworks or schemes of sewage disposal or the ventilation of public buildings. Naturally, the teacher of medicine has dismissed such matters with a casual reference, as being fortunately outside the province of the average medical man or woman. So that the curriculum which starts, rightly I believe, by inculcating a scientific outlook with a bias toward the natural sciences, then proceeds to make fairly ample provision for studies of the normal working of the healthy human body, of pathological processes and the causative elements of diseases, concentrates in its later years upon the treatment of disease and the application to it of the already acquired knowledge of physiology and pathology, to the almost complete exclusion of the bearings of these sciences upon prevention. Moreover, organised public health effort calls to its aid mathematical methods and the exact sciences to a much greater extent than ordinary medical practice does, and the teachers of medicine are not greatly concerned with these things which they and the senior students consider they have left well behind them. Preventive medicine of this kind

is not a subject which the average teacher of medicine could be expected to deal with.

COURSES IN HYGIENE AND FEVERS

In recognition of this aspect of the problem most teaching bodies have worked into their curriculum, at some stage convenient to the teachers of other subjects, a short course under the title hygiene or public health or preventive medicine, but until comparatively recently such courses were perfunctorily conceived and designed. They tended rather to emphasise the exclusiveness of this province of medicine, which was apt to mean "drains" to the undergraduate as "stinks" were chemistry to the schoolboy nourished upon classics. It is unnecessary to discuss at any length such courses, their defects and their reform, for the matter has been covered by a recent comprehensive report of the Society of Medical Officers of Health [1] which has been sent to the General Medical Council and the various teaching bodies for their consideration. The society have drafted a model syllabus which aims at recognising the importance of confining specific teaching on public health to those aspects of it which will be useful to the non-specialist practitioner and about which he is otherwise unlikely to be informed. At best such a syllabus can cover the ground only of a very much modified and abbreviated D.P.H. course. It includes a variety of necessarily disconnected items whose collective significance is not readily grasped except by those who are nearing the end of their undergraduate period and contemplating the problems of actual practice. It should therefore be placed near the end of the curriculum. In fact, the course in public health is apt to be squeezed out of the final years, yielding place to studies of a more clinical nature. For the reasons already given, it is not surprising that hygiene should get left in the scramble for a place in the final year's scheme of studies.

Again, when we contemplate the evolution of medical treatment and medical teaching, it is a matter of no surprise that instruction in "fevers," such as it is, is regarded purely as a part of systematic and clinical medicine, and is therefore apt to be wrongly related to the study of public health which is so largely concerned with the control of communicable disease. But it is disconcerting to find that the lecturer or clinical teacher in fevers may have students in his class who have had little or no opportunity of learning about even the clinical manifestations and treatment of complications of the fevers about which he ought not to have to teach them. Finally, a question may or may not be set in the paper in medicine, but if it is set, the answer is probably scrutinised by examiners who practically never see fevers and who probably have quite vague ideas as to the nature of the teaching. In the provincial schools, at least, the teachers of hygiene and fevers are usually closely associated with one another in the local health department. Their point of view is, or ought to be, similar and the examination in fevers, both written and clinical, would fit much more aptly with that of hygiene than medicine.

It is suggested therefore that the courses of instruction and the examinations in hygiene and fevers should be brought into association with one another and that they should together be given a place in the curriculum commensurate with their practical importance to the practitioner of medicine.

[1] Public Health, 1930, xliii., 253.

THE PROPHYLACTIC SPIRIT

This claim, however, represents a very minor part of our plea for the place of preventive medicine in the curriculum. Indeed, it is almost borrowing a *cliché* to say that preventive medicine should permeate the whole curriculum. How it may be done has been set out by Sir George Newman in his "Recent Advances in Medical Education in England" (1923). The report of the Society of Medical Officers of Health, already referred to, puts it this way, "Adequate training in preventive medicine can never be given in any *ad hoc* course of instruction; it can be secured only with the active co-operation of all teachers of the medical school." We must, of course, be prepared to answer the request for a plain statement as to what the teachers are to do. The answer is, indeed, perfectly simple. It is that every teacher of medicine, surgery, and obstetrics will give as prominent a place to the practical means of prevention of each disease, so far as they are known, as he does to its clinical manifestations and treatment. It means, of course, that teachers must be as greatly interested in prevention and as up to date in their knowledge of it, including its practical difficulties, as in diagnosis and treatment. In fact, their occasional pronouncements on the subject are frequently unpractical and quite often scientifically unsound. The impression of public health officers is that most of them are neither interested nor well-informed, and it is hard to see how their interest is to be roused. This is the real difficulty. My own experience as an undergraduate convinces me that it is not insuperable, for I happened to have teachers imbued with the prophylactic spirit. From comparatively early times there had been a close association between the public health administration of Glasgow and its medical school. Sir William Gairdner for a time combined the duties of professor of medicine and medical officer of health. The professors of medicine and surgery of my own time had been resident medical officers in the great fever hospitals of Glasgow, and, indeed, it was quite in the ordinary and direct line toward consulting practice to seek such posts. In this way successive generations of teachers came under the influence of distinguished hygienists like J. B. Russell, A. K. Chalmers, and John Brownlee. Prof. Samson Gemmell, when he was a young physician, used to spend his evenings prowling round the slums with J. B. Russell, and his caustic comments on the family circumstances related on the bed-cards ("thirty shillings a week and the fecundity of rabbits!") left an indelible impression of the importance of social factors upon the minds of his students. Macewen, too, never ceased to hark back to the causes of surgical diseases and to emphasise the practical measures by which they might be prevented. I gather from my colleagues that some of the schools, especially those which have not been associated so closely with university and town life, have not exhibited this preventive bent, and I think I notice the difference both in the proportion and quality of the men and women entering the public health service from such schools and also in the lack of interest in preventive medicine, and the narrower social outlook, of those who enter private practice.

A HOPEFUL SIGN

It is perhaps a hopeful sign that we have seen in recent years men who have made a great name for themselves in medicine or surgery retiring into a life of public health publicity. It is true that these men, who have been clinical teachers of note, sometimes exhibit more goodwill than understanding of the

practical problems of prevention. But the spirit is there, and, if the viewpoint they have reached has its influence upon those who have sat at their feet as clinicians, we may move much more rapidly to the right sort of teaching in preventive medicine than most of us dare to hope. It is possible also that the growing use for teaching of the hospitals under the management of the health departments may help in this direction, because it is reasonable to suppose that there will be in future a tendency toward freer circulation of staff as between the preventive and curative divisions within these departments.

But, however they are to be attained, there should be no misunderstsnding as to the aims of the public health service in relation to the medical curriculum. We certainly want the special courses on hygiene or public health or preventive medicine, or whatever it may be called, and on fevers, to be good courses and to be fitted into their proper places in the schemes of study. But we are still more concerned that the prevention of disease should never for one moment be lost sight of throughout the whole curriculum.

ACUTE POLIOMYELITIS IN CLINICAL PRACTICE

BY G. R. GIRDLESTONE, M.B. OXF., F.R.C.S. ENG.

HON. SURGEON TO THE WINGFIELD ORTHOPÆDIC HOSPITAL, AND HON. ORTHOPÆDIC SURGEON TO THE RADCLIFFE INFIRMARY, OXFORD

THE diagnosis and treatment of infantile paralysis is of intense interest nowadays, apparently for two reasons: first, the warning of epidemics which have been occurring on a small scale in our country and on a large scale in the Dominions; and secondly, the almost magical advance that has been made in treatment. The paper by Macnamara and Morgan,[1] recently published in this journal, gives convincing statistics as to the possibilities of preparalytic diagnosis and the effects of treatment by convalescent serum, and also outlines the indications for orthopædic treatment.

In this country it has not been thought possible—at any rate in the absence of an epidemic—to make a preparalytic diagnosis, and, further, efforts towards diagnosis at this stage have not seemed necessary because the effect of serum treatment has hitherto appeared to be rather problematical. Also the value and the urgency of orthopædic treatment is not yet fully appreciated or widely recognised.

I try in this paper to give due balance to the treatment indicated at various stages, and to the preparatory steps that we, in England, must take forthwith. Who can say when a big epidemic may visit us? Danger lies in inaction based on what may well be a false sense of security. Various small epidemics have occurred in this country in the last five years, and what happens on a small scale can, and probably will, happen on a large scale. Though the epidemics have been small they are none the less significant, and, whether we are to suffer from big epidemics or not, a high proportion of our sporadic cases are of the epidemic (acute febrile) character, and therefore susceptible of preparalytic diagnosis.

No longer can we plead ignorance of the symptomatology of the prodromal stages or of the *spinal sign* which is a specific and timely warning of involvement of the central nervous system; timely in that it appears sufficiently long before the toxins reach the anterior horn cells to give us time to act *if all is ready to hand.*

[1] THE LANCET, Feb. 27th, p. 469, March 5th, pp. 520 and 527.

THREE STAGES

From the point of view of treatment the disease may be considered in three stages, and I propose to give a clinical example of each stage.

CASE 1.—One day in September, 1926, a doctor found that his son, aged 6, was seriously ill. His temperature was up to 105°F., he had severe headache, and within 24 hours severe retching and vomiting which lasted two days. There was nasal catarrh with thick mucous discharge, said not to be membranous. His throat was not examined. Headache and pain in the neck and back persisted three or four days. There was no coma, he was slightly delirious at night, but perfectly lucid in the day. On the fourth day he complained of general weakness, could not move his limbs, and could not move also from bed. Within 24 hours he became almost completely paralysed, except for diaphragmatic breathing, and talking made him short of breath.

On the third day of the boy's illness, his mother sickened and went day by day through an almost identical illness. First fever, then within 12 or 24 hours severe headache, later persistent retching and vomiting. The vomiting was exceedingly difficult and exhausting, and only a little greenish mucous was occasionally brought up. There was very severe nasal catarrh with thick mucous discharge, said to be non-membranous. The throat was not examined. Her temperature reached, but did not exceed, 104°F. On the fourth day she complained of her neck and back. On the sixth day she began to feel all her muscular power leaving her, and became paralysed in all four limbs and trunk. She complained bitterly of difficulty in breathing, the auxiliary muscles of respiration were paralysed, the platysma remaining active.

The patient was eight months pregnant, and early on the fifth morning labour commenced and the baby was born without difficulty, and fortunately remained quite well.

Here indeed was a tragedy, for both patients were extensively paralysed. To have saved *both* mother and son a preparalytic diagnosis on signs and symptoms alone would have been necessary, and there was no epidemic to give a timely hint. But for the mother the diagnosis was ready-made. Lumbar puncture for confirmation and immediate injection of convalescent serum would have given her immunity.

CASE 2.—On Sept. 19th, 1922, a small boy was sent over to the Wingfield Hospital from Banbury, on about the 14th day of acute infantile paralysis. He had been, and was, ill, crying, restless, fretful, peevish, sleepless. He was wrapped in smooth-surfaced cotton-wool bandages and put on a softly padded spinal frame with head-piece, and within an hour or two all his distress disappeared and he became passive, content, and placid, an entirely different child.

When one considers the life of the average anterior horn ganglion cell, the reason for this dramatic change is obvious. Each such cell is normally compelled to allow its body to constitute a sort of telephone exhange by which various cells can make connexion with the muscle-fibres (200 or more) for which it is responsible. On the reflex side the muscle is rung up from skin, joints, and other parts of the sensorium, and the frequency of all these rings depends upon the movements of the part concerned. The messages to the motor-end-plate through the reflex arc emanate from the anterior horn cell at about eleven per second. Then on the voluntary side the cortical cells ring up the muscle whenever movements are required, and their messages pass from the ganglion cell at some 30 to 50 per second. The anterior horn cell is undisturbed only when its owner is completely at rest or asleep. During the first few days of anterior poliomyelitis not only are these cells inflamed and poisoned by the virus, but their owner is restless, fretful, and sleepless. The aching cell is subjected to, and doubtless

maddened by a constant succession of cortical and reflex stimuli. Now note the change. The smooth wool covering and the complete relaxation produced, and indeed enforced, by comfortable splintage, cut out both reflex and cortical stimuli, and the ganglion cell is at rest. Clearly the chances of recovery of every such cell are immensely enhanced.

CASE 3.—On Jan. 29th, 1931, a girl, aged 13, was brought to see me at one of our clinics. Her face was impassive and gloomy. Only two positions were possible to her: (1) she could lie on her side, completely doubled up, with her hips against her abdomen; or (2) sit in the most extraordinary position, her thighs, legs, and feet flat on the table, and her whole abdomen and chest resting along her thighs, with her face only a few inches above her feet. This was on account of fixed deformities, due to complete lack of any sort of orthopædic control.

Some years previously this girl was attacked by infantile paralysis within a few miles of the orthopædic clinic to which she only now for the first time had been sent.

WHAT SHOULD BE DONE

These cases illustrate the three main stages of the disease relative to its treatment, and from these illustrations it is easy to extract certain indications for action. But incidentally it is worth mentioning that those instances are not rare exceptions. In the three counties of Berkshire, Buckinghamshire, and Oxfordshire, with a total population of about 750,000, I have been responsible during the past nine years for the treatment (almost always at a late stage) of some 650 cases of anterior poliomyelitis which has left residual paralysis.

The indications for action may be summarised as follows:—

1. The widespread distribution of a description of the signs and symptoms of infantile paralysis in its preparalytic stage, so that every practitioner may be on his guard for the febrile case, whether sporadic or epidemic, and particularly understand how to recognise poliomyelitis arising in a "contact." At the same time he must realise how urgent is the (one) lumbar puncture to confirm the diagnosis and to administer convalescent serum. Dr. Macnamara compares this urgency to that of operation for an ectopic gestation.

2. The practitioner is helpless unless some one in his district is prepared to make a microscopic examination of the cerebro-spinal fluid at the bedside, and has been previously supplied with convalescent serum. Dr. Macnamara's figures, which are supremely convincing, come from the use of convalescent human serum put up in sterile ampoules without antiseptic, and her arguments for the avoidance of any irritating factor in the serum to be introduced into the theca are very strong, for intrathecal irritation masks the effect of the serum and makes it hard to assess the need for a further dose. I would suggest therefore that, without delay, arrangements should be made for the collection, pooling, preparation, testing, and distribution of convalescent serum throughout the country, and this distribution, while it must be widespread, should be confined to medical men whose attainments in clinical pathology are undoubted.

3. Organisation is necessary to ensure that any case in which paralysis has occurred is immediately put under orthopædic care.

For the effective working of these three phases of action the approval and coöperation of the Ministry of Health is essential.

In the State of Victoria the Poliomyelitis Committee has issued a pamphlet on behalf of the Government and the metropolitan municipalities. This pamphlet, I think, deserves study in this country, and the substance of it is reproduced below.

A MEMORANDUM ON POLIOMYELITIS

Poliomyelitis is an acute specific infectious disease which occurs sporadically and in epidemics. The infection is probably spread by means of the nasopharyngeal secretions of affected persons or carriers, though bowel discharges may also convey infection. In a few instances localised outbreaks have been traced to infected milk supplies. The virus usually enters the body by way of the nasopharynx, invades the blood stream, causing a systemic infection, and in the majority of cases recovery then ensues—abortive cases. In a proportion of cases, however, after an interval, the central nervous system is invaded and, as a result of interference with the vascular supply by leucocytic aggregation around the vessels of the brain and cord, destruction of some of the cells results. The extent of paralysis which results depends upon the degree of interference with the blood-supply to the anterior nerve-cells. The incubation period is usually five to eight days.

Symptomatology

MODE OF ONSET

In earlier epidemics a number of cases occurred in which the onset of paralysis followed very closely upon the onset of the illness. Fortunately in the epidemics of the last decade this type of case is rare. The majority give a definite history of illness extending over several days with or without an intermission. Draper classifies the mode of onset as follows:—

1. *Fulminating.*—Hyperacute cases in whom paralysis is not preceded by illness. These are uncommon.
2. *Dromedary type.*—In this group, after a period of symptoms of general infection, an interval of apparent recovery precedes the signs of meningeal invasion which usher in paralysis. This type has been common in Victoria in the last five years.
3. *Straggling group.*—In these, slight variation occurs in the symptom complex of a sustained and progressive illness.

GENERAL SYMPTOMS

Fever is usually present, rarely high, and in adults the temperature may not be higher than 99° F. It varies in different localities and at the various seasonal phases of an epidemic. Headache is common and frequently severe. Constipation has been usual. Convulsions are uncommon, repeated convulsions so rare that their occurrence would suggest another diagnosis. Vomiting once has been the rule and in young adults it may be persistent. Symptoms of involvement of respiratory and gastro-intestinal tracts may occur and the complaint of sore throat has been frequent. The tonsils are usually engorged. Such symptoms may occur with any of the acute infections, but, even at this stage, there are certain signs which aid in the differentiation from other diseases. Drowsiness and irritability occur in the same patient, the child lying quietly and apathetically unless disturbed when he becomes apprehensive and resentful. Retention of urine and localised or generalised sweating may occur at this stage.

Fever, vomiting, headache, constipation, drowsiness, and irritability and sweating, and possibly retention are enough to justify a tentative diagnosis of poliomyelitis and, in times of epidemic at least, demand careful observation for the first evidence of meningeal involvement if such is to develop.

STAGE OF MENINGEAL INVASION

Pain may be felt in the back, in the neck, in the limbs and between the shoulders. In older patients it is severe, and in all, aggravated by anterior flexion. True head retraction and opisthotonus may occur as definitely as in tetanus and cerebro-spinal meningitis, but more usually the *spine sign* is present. This sign may be described as a disinclination to flex the spine anteriorly because "it hurts." Most children,

if handled patiently, will try to obey when asked to kiss the knees, but if the spine sign be present the attempt is given up because of the pain induced by anterior flexion. *Amoss's sign* is a modification of the spine sign, and it is useful with older children. When placed sitting upon a chair or table and asked to fold the arms the child may attempt to do so, but quickly reverts to the position in which part of the body-weight is borne through the arms, which make two legs of a tripod, the spine being the third. In babies one has to rely on passive flexion to estimate the degree of pain caused by the movement. Popliteal pain is common and may be persistent. Hyperæsthesia may be generalised or local, and it is unaccompanied by swelling. Tremor of the hands is frequently observed. The reflexes are irregular, inequality is common and an increase in the irritative stage is usually followed by loss when the paralysis occurs. Even in the absence of an epidemic the presence of some of these signs, hyperæsthesia, tremor, spine sign and Amoss's sign, pain in the neck, retention, following a general infection as evidenced by some fever, headache, &c., justifies the presumptive diagnosis of poliomyelitis and calls for proof by examination of the cerebro-spinal fluid.

It cannot be too strongly emphasised that lumbar puncture in acute illness, in the absence of definite indication, is unreasonable and unfair, but in times of epidemic of poliomyelitis every instance of illness in which a careful physical examination cannot reveal the cause should be watched carefully for the first evidence of meningeal invasion and, if the signs appear, a lumbar puncture should be carried out forthwith. It is only justified, however, if provision is made for immediate bedside examination of the cerebro-spinal fluid and if immune serum is available. It has been shown to be dangerous to remove a quantity of fluid from a case of poliomyelitis in the preparalytic stage and to delay the administration of serum while that fluid is sent away for examination. For diagnostic purposes 5 c.cm. of cerebro-spinal fluid suffice, and the examination at the bedside can be carried out quickly if the microscope and counting chamber, &c., are ready for use before the lumbar puncture needle is inserted. By this means a second lumbar puncture may be avoided if one desires to give serum intrathecally.

In cases of poliomyelitis the pressure is usually increased, and the fluid is clear or, at most, "ground glass" in appearance. Globulin is slightly increased, but frequently twenty minutes must elapse before reading the ammonium sulphate test. The cells are increased, polymorphonuclear and mononuclear, the ratio of the latter increasing rapidly as paralysis approaches. The chlorides are not reduced, thus furnishing a useful means of differentiation from tuberculous meningitis, which clinically resembles poliomyelitis and in which the cerebro-spinal fluid also shows a pleocytosis. The apparatus for estimation of the chlorides is very simple and the test easy and reliable.

STAGE OF PARALYSIS

It is usual to classify paralysis as follows:—

1. Spinal—affecting the lower motor neurone, the common type.
2. Cerebral—affecting the upper motor neurone, causing a spastic paralysis.
3. Cerebellar—in which ataxia is a predominant symptom.
4. Polyneuritic—in which hyperæsthesia is marked. Anæsthesia is uncommon and if persistent suggests a diagnosis other than poliomyelitis.
5. Bulbar.
6. Ascending cases in which the paralysis spreads upwards.

In epidemics earlier in this century the initial paralysis was usually not exceeded, but in the last few years the tendency to spread over several days and even to extend some weeks later has been observed in Victoria and Tasmania. In all cases the ultimate residual paralysis is less than the initial. The recovery of muscle function, which results in any case, depends upon two factors, firstly, upon number of new cells which survive, as the subsidence of the leucocytic aggregation and œdema around the vessels re-establishes the circulation; and, secondly, upon the care given to the patient, especially during the first two years.

In cases in which respiration is interfered with the drowsiness of the early stage changes to an alertness, all energies being concentrated upon the effort of breathing. The flaccidity and asymmetric distribution of the paralysis have been dealt with fully in the older literature. Bulbar-spinal types with ocular and facial paralyses are characterised by a profound stupor, but the prognosis for life is better than in the alert children. Mortality in poliomyelitis is not due to toxæmia but to interference with respiration.

Treatment

BY HUMAN IMMUNE SERUM

The prodromal symptoms have been emphasised because the recognition of the disease at this stage is essential for successful treatment by means of serum prepared from the blood of persons who have survived an attack of poliomyelitis.

Immune serum has been prepared for the Committee by the Commonwealth Serum Laboratories, Melbourne. No antiseptic has been added, but the sterility of the serum has been very carefully ensured. The serum is stored in 10 c.cm. ampoules. In order that the method of therapy shall not be brought into disrepute by use in unsuitable cases or by unsatisfactory technique, the committee has arranged for various depôts throughout the country where the serum is held at ice-box temperature in charge of a consultant prepared to carry out the necessary examination of the cerebro-spinal fluid and to direct the administration of the serum.

Serum should be administered intrathecally and intravenously, the dosage usually averaging about 60 c.cm. A second intravenous dose or even a third may be necessary if the response to the first is not immediate. The intrathecal injection should be given slowly and by the gravity method, after withdrawal of a larger amount of cerebro-spinal fluid. When the serum has been used under conditions regarded as essential: (1) without delay between withdrawal of fluid and its administration; and (2) when given intrathecally and intravenously in adequate dosage, the results of the therapy in Victoria have been in line with those of workers in America and New Zealand, summed up by Aycock as "beneficial as evidenced by (1) a low mortality-rate; (2) a low average total paralysis; and (3) a strikingly low proportion of paralysis of the severer grades."

The recognition of the preparalytic stage is essential for successful serum therapy. Administration within 24 hours of the advent of paralysis is justified if the patient is febrile and the supply of serum ample. If given later, when paralysis is stationary, serum is of no value; while in the spreading cases administration is justified, but is sometimes unavailing.

TREATMENT AFTER THE ADVENT OF PARALYSIS

Lovett has divided the treatment after paralysis has occurred into three phases:—

(*a*) The acute stage—lasting until the disappearance of the tenderness.

(*b*) The convalescent stage—from the end of the acute stage and continuing as long as recovery is occurring—lasting over two years.

(*c*) The chronic stage—when the condition is more or less stationary.

In the acute stage rest should be as complete as possible and nursing disturbance reduced to a minimum. The patient should be nursed on a firm bed, and the limbs kept in position from the onset, by means of plaster beds or improvised splints, to prevent stretching of weakened muscles and development of deformities. Care should be taken to prevent dropping and inversion of the foot or toes, outward rotation of the lower limbs, flexion of the knees and hips, and adduction of the shoulders when the deltoid is paralysed. Facial, abdominal, gluteal muscles, opponens of the thumb are frequently neglected and allowed to stretch with resultant permanent crippling. The most useful splint is one of the double Thomas pattern, with foot pieces

and malleable arm pieces, capable of alteration to suit the recovering muscle function.

In cases with involvement of respiratory muscles raising the foot of the bed 2–3 feet and injection of atropine may save a patient from drowning in his own secretions. Feeding should be carried out by the bowel.

In all paralysed cases prolonged immersion in hypertonic saline baths hastens the disappearance of the hyperæsthesia. A brisk aperient, liberal supply of fluid, firm bed, and immediate splinting are the chief points in the treatment of the acute stage. In this second or convalescent stage the treatment may be summarised as follows :—

1. Obtain the early coöperation of the parents for long-continued rest in order to achieve the best result of which the patient is capable.

2. When the tenderness has gone commence muscle re-education. The results achieved by a masseuse, who has had special training in muscle re-education, will be three times as good as those obtained by a well-meaning amateur.

3. Radiant heat and saline baths are useful.

4. Splinting must be constantly supervised and modified in order to prevent stretching of the weaker muscles by the pull of stronger opposing groups.

5. Deformities develop quickly. Scoliosis, hyperextension of the great toe, adduction of the shoulder, and genu valgum are easily corrected at their first appearance and all are preventable.

6. If abdominal muscles are paresed a well-fitting cloth corset should be fitted, even during recumbency, to prevent stretching of the weakened muscles.

7. Standing may be allowed for a few minutes daily after some months, but not if a position of deformity is assumed in order to stand.

8. Sitting and crawling, which favour flexion of hips, and scoliosis and foot-drop should be avoided.

9. The number of cases in which complete recovery is to be obtained in infantile paralysis is greatly extended by keeping the patients from walking during the first year and in many during the second year also.

10. When it is decided that no more improvement is occurring or that the time has come to allow walking, a brace should be worn by any patient when an unnatural position of the limb is assumed in standing or walking.

11. If the patient is of school age, arrange at the outset for regular lessons.

BRITISH PROVIDENT ASSOCIATION

MANSION HOUSE MEETING

On June 8th the Lord Mayor of London presided over a meeting to make known the aims of the British Provident Association for hospital and additional services.[1] The Prince of Wales, in opening the meeting, said that when the British Provident Association launched its fully developed scheme a few weeks ago he sent them the following message :—

"As President of King Edward's Hospital Fund for London, I have had the opportunity of following closely the development of the proposals of the British Provident Association. They are designed to meet the needs of those who now find it difficult to get treatment of serious illness at a price within their means. I believe the coöperative method of the Association to be the right one, and I shall watch the progress of the Association with great sympathy and interest."

Because he firmly believed in the Association, it gave him great pleasure to repeat that message in person and convey to Lord Lloyd, who had agreed to help in launching the scheme, and to his other friends on the Council, his sincere wishes for the success of the venture. Work, which was badly needed, was being done to help people of moderate means to meet the grave difficulties and expense of serious illness. The schemes to this end had not been hastily or suddenly conceived. He had watched them developing and maturing since 1927, when the committee set up by himself as President of King Edward's Hospital Fund investigated the whole matter. That committee believed that there were great possibilities of development in these schemes ; he shared that belief, for it was one of our strongest characteristics as a nation that we liked to stand upon our own feet, and not be beholden to others. That was the essence of the British Provident Association schemes. To the question, "How is provision to be made for us ?" the answer was, "Provide for yourselves"—an answer that most appealed to British people. In order that these schemes might be successful—and he was confident they could be successful—what was needed was that all concerned should coöperate to solve their own problem. In every organisation, and in every area throughout the country, there were people who felt the difficulty and the needs ; if those people would get together, talk the scheme over among themselves, and tell the British Provident Association what their needs were, they would best help one another to find a way out of their present difficulties. In conclusion his Royal Highness said :—

"What I particularly want to impress upon you is this : coöperation and self-help are the motive forces upon which this Association relies—they are the forces which alone can solve the many grave problems that confront the world to-day. And, if they are employed to the full, I am confident they will solve this problem too."

Lord Lloyd said that for the working-class patient there were the voluntary and public hospitals ; for those who could afford to pay substantial charges there were nursing homes ; while in between was that great body of people who had only moderate means. For these the sudden calamity of a dangerous illness or a serious operation would be more than likely to prove a disaster from which their finances could not recover. Two proposals were now being put forward to meet this state of things.

The first was for the provision of sorely needed hospital and nursing home beds at reasonable charges. To provide such a bed would cost on an average £1000, and it would suffice for the sickness needs in one year of rather more than 100 families. Therefore, if each head of a family put up one payment of £10, he had provided his share of the capital cost of the accommodation needed for himself and his wife for life, and for his children till they reached the age of 21. Capital cost was the actual cost of putting up the building and equipping it for the reception of patients. The cost of maintenance would, of course, still have to be provided by the patient, but in these beds the cost of maintenance would be brought down to a figure within the reach of moderate means, and this would be one of the most important advantages to the contributor. The second proposal was for the provision of some means whereby the cost of maintenance during serious illness and of heavy surgical fees could be substantially, if not wholly covered. The Association had for ten years past worked out and tested very carefully schemes on these lines, and the yearly subscription payable had been fixed at the lowest rate that prudence and experience prescribe. These schemes were, in fact, the development which the King's Fund recommended—they were designed to enable people of

[1] THE LANCET, May 7th, p. 993.

moderate means to provide the capital cost of the accommodation which they so badly need, and then by yearly subscriptions of an amount suited to their circumstances to lighten the financial burden of serious illness. A thousand beds were immediately required to mitigate the urgency of the problem, and for that 100,000 £10 contributors were needed. These beds would be provided either in or contiguous to existing voluntary hospitals, or else in new and separate buildings.

The scheme had been launched only a few weeks ago, but already very numerous inquiries had been received, while subscribers were being registered on the books in increasing numbers.

Sir ALAN ANDERSON expressed his satisfaction at the financial help and encouragement which had been received from King Edward's Hospital Fund, the City Companies, and from many influential people. He expressed his belief in the success which would attend the scheme, pointing out as an example the remarkable growth of the Hospital Savings Association.

Lord MOYNIHAN, who said he was present on behalf of the surgical profession of the country to give support to the scheme which Lord Lloyd had outlined, referred to the wonderful march of science during the past 50 years, and the great progress that had been made in every department of life. In that march medicine had kept pace, and contrasting past and present he referred to the terrible anxiety of Sir Astley Cooper when he had to remove a small growth from the head of George IV. The hospitals in the Crimea stank a quarter of a mile away, and Lister, who in Lord Moynihan's opinion was the greatest benefactor man had ever had, had spoken of the hospitals of his early career as pest houses. Since then surgery had progressed infinitely, and while Lister had made surgery safe for the patient, it now remained to make the patient safe for surgery. Preparation and treatment might be needed for days, weeks, or months, and for this institutional care was required. The voluntary hospital system was one of the greatest glories of the present day, and in those hospitals the poor obtained the best possible treatment. The people for which the British Provident Association scheme was intended could not avail themselves of these institutions, while the strain on their purses would be too great for them to obtain the same adequate treatment that the poor obtained through charity.

Lord DAWSON OF PENN said that side by side with the decreased capacity of the public to pay there had grown up an increased cost of living and of medical treatment. This was due to the growth of knowledge, which had put at the service of medicine increased methods of investigation of great advantage to the individual and to the community. Diagnosis could be made more accurately, and the treatment not only restored the patient to more complete health but it might often get a bread-winner back to work promptly. These things, however, might be beyond the financial resources of an individual, for the increased efficiency of treatment meant its increased cost. The public was now taking a greater interest in health matters, and endeavours to investigate diseases in their earlier stages were seen to be needed. He believed that no scheme of insurance should confine itself to serious illness; rather it should include within its ambit measures to prevent serious illness. As showing how the cost of treatment had rapidly increased, he said that the expenses of the X ray department in one institution during the last ten years had been multiplied threefold. There was only one way of meeting the needs of the majority, and that was by mass production. There must be insurance, and was not insurance part of the fabric of our daily life? The scheme of the British Provident Association was a pioneer movement, undertaken with full understanding of the difficulties to be faced; it should receive all possible encouragement.

A large and representative group of public men were present, and the meeting terminated informally.

HOSPITAL CONFERENCE AT LIVERPOOL

THE annual joint conference of the British Hospitals Association and the Incorporated Association of Hospital Officers was held at Liverpool from June 9th to 12th.

The subjects for discussion included the need for an active international hospital association, opened (in absentia) by Dr. E. Corwin, of New York; the place of the almoner's department in hospital treatment, opened by Dr. W. H. Maxwell Telling; hospital planning, opened by Col. D. J. Mackintosh; and the ways of maintaining the voluntary hospitals under modern conditions, opened by Major Raphael Jackson.

One of the most topical discussions was that on

Hospital Service for Persons of Moderate Means

This took place on board the *Laurentic* on June 9th and was opened by Major R. H. Thornton, hon. treasurer of the Liverpool Maternity Hospital, from the lay point of view, and by Dr. J. C. Matthews, hon. physician, Liverpool Royal Infirmary, from the medical point of view.

THE LAY ASPECT

For purposes of discussion Major THORNTON defined the middle class as the economic class with an income range from £250 to £550 per annum. The highest available standard of hospital service, he said, could be commanded only by the very rich or the very poor. Although the voluntary hospitals were no longer purely charitable institutions, they retained a bias in favour of this aspect of their work. The capital and running costs of small private institutions were high and their charges could hardly be less than £7 a week; to the man of moderate means this was a large sum. Moreover, by reason of the immense amount of work which physicians and surgeons performed for nothing, their remunerative working time was curtailed and their fees were consequently nearly double what they would otherwise be. Most voluntary hospitals nowadays provided hospital maintenance and facilities for treatment at low cost, but where this provision was inadequate it should not be impossible for leading insurance companies to finance the erection of middle-class nursing homes, the cost of which would be balanced and a reasonable profit ensured by the premiums payable. Apart from insurance companies, the recent development of municipal hospital services indicated that provision of cheap clinical accommodation might come within their scope. Probably the middle class really needed some form of coöperative scheme analogous to the contributory schemes common among manual workers. The manual worker in the voluntary hospital admittedly got something for nothing. The middle class could hardly expect this, and must be prepared as a group to defray the cost of maintenance

and treatment. A number of schemes were in existence but most of them only partially met the difficulty, because there was no clinical accommodation provided actually in conjunction with any scheme, at rates in conformity with it, and because medical and surgical fees were not usually included. If such a scheme was to be secure, an adequate amount of bed accommodation must be available to the contributing group, at known charges, if not at charges fixed by the promotors of the scheme. The medical profession must be a party to the scheme in the sense of agreeing to a maximum scale of fees. Unless such a scale was fixed no insurance or contributory scheme would, in Major Thornton's view, be actuarially workable. During recent years the volume of hospital treatment given had increased steadily; the medical and surgical work of the country was becoming hospitalised, and the process had taken place at the expense of the family doctor. It was arguable that a middle-class hospital service would only give this process a fresh impetus; on the other hand, cheaper facilities for hospital treatment undoubtedly tended to stimulate the hygienic education of the community; this in turn produced a keener intolerance of even minor disease, and an increase in general medical practice. Nor was there anything in a middle class hospital service to discourage coöperation between the family doctor and the hospital staff. Specialisation of diagnosis and treatment was the trend of evolution in medical science, and the requirements of the specialist would be better met in a well-equipped hospital of 100 beds than in 100 stuffy bedrooms in 100 semi-detached villas. An income limit would have to accompany any agreement limiting professional fees. As a tentative outline of a middle class hospital service for a large urban area he suggested that a joint committee representing the municipal health department and the local voluntary hospitals and their medical staffs should select a general hospital, of which one section would be chosen for conversion into the required number of private wards. A leading insurance company or the local hospitals' contributory scheme, if one existed, would be asked to undertake the actuarial and administrative work. Applications for enrolment would contain a sworn copy of the applicant's last statement of income to the inland revenue. A medical board, in conjunction with the promotors of the scheme, would draw up a tariff of fees for consultants' attendances, surgical operations, special treatment, and nursing; there would also be a standard tariff for maintenance in hospital, based on ascertained costs. On these, and on the economic statistics of the area, the rates of contribution would be arrived at. Any physician or surgeon might offer himself for enrolment as a member of the medical staff of the service. It would be open to any practitioner to recommend his contributor patients to any member of the staff of the service whom he might select.

THE MEDICAL ASPECT

Dr. J. C. MATTHEWS thought that the demand for middle-class hospital provision had been exaggerated, although he was prepared to admit that it existed. The disadvantages of such a service included the red tape, the lack of the personal touch, and the loss of contact with the family practitioner which institutional treatment involved. Mr. Frank Jeans, speaking recently at a Round Table luncheon had said: "If, the moment a patient is seriously ill with pneumonia or appendicitis, he is shipped off to a hospital and out of the doctor's hands, where is the interest in the practice of medicine? . . . On the other hand, if a doctor can take a patient into a nursing home and look after him himself, the specialist doing his part of it, you have there the best of consultative work; you have the doctor's knowledge of the patient and the consultant's knowledge of his special branch." Among the schemes shown him on paper, Dr. Matthews said it had been too readily assumed that a surgical operation was the only contingency to be contemplated. Medical cases formed a substantial minority and could not be ignored, while a certain number of cases required more or less elaborate clinical investigation. Though the income limit to be imposed, and the charges to be made for medical attendance must come under discussion in drawing up schemes, there were other matters on which the medical profession would wish to be heard. It was important that the patient should have the widest possible choice of consultant, a choice in which he would be well advised to consult his family doctor. The rules of a hospital providing middle-class accommodation should not only permit the continued attendance of the family doctor, but should limit as little as possible the employment as consultant of any practitioner able to satisfy one or more of the following conditions: (1) that he was holding or had held hospital or other appointments affording special opportunities for acquiring special skill and experience of the kind required for the performance of the service to be rendered, and had had actual recent experience in performing such service; or (2) that he had made special academic or post-graduate study of a subject comprising the service to be rendered, and had had actual recent practice, as already said; or (3) that he was generally recognised by other practitioners in the area as having special proficiency and experience in a subject comprising the service to be rendered.

In large cities, such as London, Liverpool, Birmingham, or Manchester, the demand for middle-class beds might be sufficient to justify the establishment of separate institutions. In the smaller cities and county boroughs the demand would only be sufficient to warrant the provision of beds in association with a local voluntary or municipal hospital, the special equipment and resident staff of which would be used for the patients in such beds. The income limit difficulty could be met partly by providing graded accommodation, the medical fees in the lower grades being on an agreed scale, and those in the higher grades being a matter of private arrangement between doctor and patient. At St. Chad's Hospital, Birmingham, patients paid either 6 guineas a week plus fees for medical attendance, or a composition fee not exceeding 12 guineas to cover everything; this hospital appeared to be conspicuously successful. At Newcastle a block of the Royal Infirmary had recently been opened as a hospital for paying patients under several grades. As long as a hospital was not making a profit more than sufficient to pay a moderate dividend on capital expenditure, and to provide for justifiable improvements and additions, it was not unreasonable to ask doctors to adjust their fees to the means of the patients. He thought that at present most doctors were in favour of keeping the charge for maintenance and the charge for professional attendance entirely separate, but he appreciated the fact that promoters of contributory schemes wanted to know in advance what the cost of appropriate services would be in order to calculate premiums. The British Provident Association published scales of fees payable for surgical operations; these were in the nature of grants-in-aid to the patient who would

have to meet surgeons' fees, but it could be assumed that they had been drawn up with professional assistance and were commensurate with actual charges. It must be evident that the provision of hospital accommodation and the promotion of insurance schemes should be kept separate from one another. No hospital should undertake actuarial risk. There should be no reservation of accommodation for the exclusive use of subscribers to a scheme, nor should subscribers be restricted in their choice of accommodation. A grant-in-aid scheme, such as that of the British Provident Association, possessed the elasticity by which the needs of the subscriber could be met.

MEDICINE AND THE LAW

University of Durham College of Medicine: An Inquiry into Administration

Prof. Rutherford Morison's letter, published in our columns on June 4th (p. 1229), has not failed to attract much attention. Clearly there is plenty of support in Newcastle for the view that on the one hand there should be no delay in the impending inquiry into the administration of the College of Medicine and the circumstances of Prof. Hutchens's dismissal; and that, on the other hand, out of respect for the possible recommendations of the tribunal, the College should hesitate to commit itself meanwhile by making an immediate appointment to a professorship of bacteriology. A letter by Prof. H. V. A. Briscoe, professor of inorganic chemistry at the Armstrong College, printed in the Newcastle *Evening Chronicle* of June 8th, shows that, apart from the unfortunate dispute in Prof. Hutchens's case, there is at Newcastle an atmosphere unfavourable to the successful working of academic institutions. It would obviously be improper to prejudice the inquiry by any one-sided version of the present controversy. It seems possible, however, to state the two sides of the case as disclosed in the legal proceedings initiated and lately abandoned by Prof. Hutchens against the College council and Sir Robert Bolam. For this purpose the statement of claim and the defence in those proceedings are summarised here, though it is needless to remind our readers that the legal aspect is not the only aspect that matters, and that these formal legal pleadings are not intended to convey the maximum of information but merely to define the technical issues which a court of law is asked to decide. These legal documents necessarily take no account of many matters of general interest and importance—such, for instance, as the security of tenure in academic appointments or the proper policy of a medical school.

Prof. Hutchens issued his writ on Oct. 15th, 1931, against the University of Durham College of Medicine at Newcastle and against Sir Robert Bolam on behalf of himself and all other members of the College council. His statement of claim set forth the following facts and contentions. He says he was appointed Heath professor of comparative pathology in 1908, and (under University Statute 59) he was a professor of the University so long as he held that chair. It was a whole-time chair; the professor's duties were (*a*) to deliver the lectures and carry out the instructions on pages 48, 49, and 55 of the College calendar, and (*b*) to conduct the work of the bacteriological diagnosis department, with liberty to undertake private special investigations subject to the council's approval. The stipend was £600 (£160 from the endowment and £440 added by the College). He had previously for three years been working at the College, and had on Jan. 1st, 1907, been appointed lecturer in comparative pathology and bacteriology for 12 months; but he contends that he never held this lectureship after his appointment to the Heath chair. In October, 1921, the College council, adopting a report of the finance committee, resolved (inter alia) that his salary be £1400 a year in lieu of his then salary and fees for private work. Prof. Hutchens claims that he performed these duties and received this salary as Heath professor and that his professorship (whether of the University or in the College or both) was not determinable by the College council. On March 13th, 1931, the council passed a resolution that he be given six months' notice terminating his engagement as lecturer in comparative pathology and bacteriology in the College of Medicine, such notice to terminate Sept. 30th, 1931. He received this notice signed by Sir Robert Bolam. He contends that he was not, and for 23 years had not been, lecturer as thus described, and that the notice was invalid to determine his office as professor of comparative pathology. He complains that the College and its council wrongfully treated the notice as valid, withheld his salary, and excluded him from his duties, and he contends that this was equivalent to dismissal; he claims that such dismissal is invalid and wrongful, no effective notice having been given, and he himself having been guilty of no misconduct or breach of duty. He also complains of having been wrongfully excluded from membership of the council, from the academic board of the College, and from the court of governors. Finally he asks the court to grant the following remedies: (1) a declaration that the resolution of March, 1931, was invalid and ineffective to end his appointment as Heath professor; (2) a declaration that he is entitled to membership of the College council, academic board, and court of governors; (3) an injunction to restrain the College, Sir Robert Bolam, and other members of the council from attempting to exclude him from the meetings and proceedings of these bodies; (4) damages; (5) further or other relief; and (6) costs.

In their formal defence the defendants admit certain matters in the statement of claim and deny others. They rely on certain statutes made under the University of Durham Act of 1908, particularly clauses 24, 25, 30, 54, 57, and 59. Under these they claim that the senate of the University can define the terms and conditions, duties and remuneration of offices, and can remove any professor (except the professor of divinity and Greek) from privileges and membership of the University; the council of the Durham Colleges has power to exercise full control over the teaching in the Durham division, and the medical college at Newcastle has similar power and can regulate its constitution and government under its articles of association. The defendants refer to clause 50 of the articles, empowering them to appoint and fix the remuneration of professors and lecturers and to remove these members of the staff if removal is sanctioned by at least one-half of the entire council specially summoned. They say that the College, by letter of December, 1906, appointed the plaintiff lecturer in the department of comparative pathology and bacteriology for a year from Jan. 1st, 1907, and that this appointment was (or must be deemed to have been) renewed thereafter. They contend that the resolution of March, 1908, in effect combined in the person of the plaintiff the offices of Heath professor of the University and of lecturer or head of the department of comparative pathology and bacteriology in the College; the plaintiff, while Heath professor, was liable to the College to perform the duties of this lectureship from

year to year as directed by the College. They argue that the plaintiff's duties were substantially altered in 1921 and 1922 and were further defined in 1928 and 1930 as the minutes of the council's meetings will show. They deny that they have terminated his appointment as Heath professor; they say he is entitled to £167 13*s.* per annum from the endowment. They claim that the notice given to Prof. Hutchens in March, 1931, was valid to determine his office as lecturer or head of the department of comparative pathology and bacteriology in the College. They admit that he has been dismissed from his office and engagement with the College, but they deny that such dismissal was wrongful; they say the notice was reasonable and proper. They contend that the plaintiff was entitled to be a member of the academic board *qua* lecturer and head of the said department, but not *qua* University professor. His membership of various College bodies ceased when his appointments with the College were terminated. They contend that the defendant council and Sir Robert Bolam have at all times acted bona fide and in the proper exercise of their powers. Lastly, while denying liability, the defendants bring into court the sum of £1232 7*s.* (i.e., 12 months' salary at £1400 less the annual income from the Heath endowment) and say that such sum is in any event amply sufficient to cover any claim the plaintiff may have.

As soon as this defence had been delivered, Prof. Hutchens had choice of three courses of action. In the first place he could go forward with his action, but it was naturally felt that, while litigation was impending and his legal claim was sub judice, the much desired inquiry into the affairs of the College could not proceed. Secondly, he could take advantage of the final paragraph in the defence and could pocket the sum of £1232 7*s.* paid into court by the defendants; the legal effect would be that his action would be discontinued and could never be reopened but the defendants would have to pay his costs. Thirdly, he could discontinue his action without taking the money out of court; in this event, though he would be at liberty to recommence legal proceedings at any future date, he would expose himself to the risk of having an order for costs made against him, he would throw away the chance of making the defendants pay his costs up to date, and he would place himself at the mercy of the governors as regards any payment to be made to him and generally as regards the way in which his case could be dealt with as the result of the inquiry. Prof. Hutchens chose the third course, voluntarily depriving himself of the right to take the money out of court or to obtain his costs. His formal notice of discontinuance was accompanied by a letter from his solicitors making it clear that the claim was withdrawn because Prof. Hutchens's object had been achieved, inasmuch as the governors of the College had decided to hold an inquiry into the whole administration of the College.

These legal proceedings being now out of the way, there seems nothing to obstruct the opening of an impartial inquiry which, in the interests of the medical school at Newcastle, its students and staff, should be as prompt and thorough as possible.

Hospital Patient's Allegations of Negligence Fail

On June 9th and 10th the Lord Chief Justice and a special jury heard the action of Russell *v.* Groves and Lancaster. In May, 1930, the plaintiff was brought to the Bristol General Hospital after a bicycle accident; his right leg was found to be fractured. He now alleged that Dr. L. Lancaster (senior resident officer) on the instructions of Mr. Hey Groves (senior honorary surgeon) had the leg encased in plaster, and that, as a result of no "window" being left in the plaster, the fact was unknown that the leg became septic from a wound in the heel; the poison spread and the leg was amputated first at the knee and later at the middle of the thigh. Mr. Maurice G. Fitzgerald, honorary surgeon to the Teddington and Hampton Wick Cottage Hospital, who attended the plaintiff on his return home from Bristol, described the plaintiff's complaint of pain in his heel and the discovery (after a "window" had been cut in the plaster) of the septic condition of a wound at the back of the heel; in spite of drainage treatment, the first amputation was found necessary. Mr. James E. H. Roberts, of Harley-street, described the second amputation. In cross-examination he agreed that eminent surgeons did not leave a "window" in the plaster encasing a fractured limb; he would not regard it as negligence not to leave an aperture in the plaster. Although these answers might seem to have destroyed the plaintiff's charge of negligence, the Lord Chief Justice did not stop the case but left it to the defendants to call their evidence on the other side. Mr. Hey Groves said it was the common practice among surgeons to case the whole of the limb. Sir Robert Jones, Mr. C. M. Page (surgeon to St. Thomas's Hospital), and Mr. Russell Howard (consulting surgeon to the London Hospital and the Poplar Hospital) agreed with Mr. Hey Groves's evidence. The witnesses said it was safer and better to cover up a wound with plaster than to leave a "window"; there was a bigger danger of infection if a "window" were left, because the exposed part of the limb might bulge, become moist and discharge. The Lord Chief Justice pointed out to the plaintiff's counsel the difficulty of establishing the charge of negligence in the face of the evidence of these expert witnesses. The action was nevertheless continued on the second day when Dr. Lancaster was called into the witness-box. During his examination counsel for the plaintiff intimated that, after hearing both the defendants and surgeons of great eminence, he had advised his client that it was clear that there was no negligence on the part of either defendant. The plaintiff thereupon submitted to judgment, and the jury, on the instructions of the judge, found a verdict for the defendants. The Lord Chief Justice, observing that it was idle to expect that any verdict could be found against either defendant, gave judgment against the plaintiff with costs.

Once again we have a case where the plaintiff's advisers are convinced by the defendant's evidence and withdraw their allegations after putting the defendants to the expense and annoyance of legal proceedings. It seems a pity there is no simpler method of satisfying a plaintiff that his charges are groundless.

MILLER GENERAL HOSPITAL: ANNUAL REPORT.—The annual report expresses great satisfaction that it has been possible to carry on the hospital's work without having to close any of the beds. This however was only made possible by the exceptional legacies received during 1931. The expenditure was £41,557 as compared with £39,614, an increase largely accounted for by renewals and repairs to buildings and plant. The income was £42,769, of which no less than £8722 came from legacies; without them there would have been a deficit of £6510. The number of patients admitted into the wards was 2335; the average stay of each patient was 21 days. There is an urgent need for a new out-patient department, the present accommodation being quite inadequate.

CORRESPONDENCE

THE INCREASE IN CANCER OF THE LUNG

To the Editor of THE LANCET

SIR,—The leading article in your issue of June 4th refers to the increasing incidence of cancer of the lung as a fact. A similar view was put forward by speakers at a recent discussion at the Royal Society of Medicine. With due respect both to yourself and to the speakers in question, I would suggest that this proposition is, as yet, not proven; and that, even if it were, certain qualifications would be necessary in its enunciation for its full significance to be appreciated.

In the first place there is the influence on statistics of increase of medical knowledge and of improved methods of diagnosis. This point needs no labouring. One is more likely to discover a condition if one is familiar with its existence; and also if one has at hand the various diagnostic instruments to supplement data derived from the senses and to differentiate one condition from others which may simulate it. In the third edition of "The Principles and Practice of Medicine" (Fagge and Pye-Smith, London 1891, vol. ii., p. 117, et seq.) we read that "the physical signs caused by mediastinal new growths are due chiefly to their size. . . As may be imagined such large growths . . . cause great dullness on percussion. . . The other physical signs of mediastinal tumours are very uncertain." No one, I imagine, would presume to suggest that we are better clinicians than our predecessors of 40 years ago; and we have therefore no reason to think that we should be in any better position than they were had we to rely on physical examination and such instrumental aids as were then available. Such progress is cumulative; and those who, as students, have had their attention directed to the condition by seeing cases in hospital are more likely to suspect its presence in cases encountered later. We must remember, too, that even now it is not unknown for patients diagnosed—and rightly so—as suffering from empyema, bronchiectasis, or tuberculosis (with tubercle bacilli in the sputum) to be found at operation, or on post-mortem examination, to have a pulmonary new growth. Is anyone prepared to say what proportion of those who in former times appeared in hospital statistics and death returns under these three headings—or even as acute or chronic bronchitis, or pneumonia—would now appear under a different heading?

It is sometimes contended that, even if the clinician of former years were found lacking the pathologists were then at least as good as those of to-day, and would have unmasked their contemporaries' failings. But demonstrators though they be of the soberest of sobering truth, how could they be expected to demonstrate what did not come to their post-mortem rooms? If patients are considered to be suffering from a disease which is not suitable for treatment in the wards of a hospital they do not gain admission, or if admitted do not stay indefinitely. The criteria of suitability have many variable factors, including the state of medical knowledge. Hospital statistics, in fact, are based only to an approximate extent on the principle of the "fair sample" which statisticians require to be present before they will admit the validity of any deductions. Death returns also, although they show the number of deaths known to occur in any given year, must vary as to classification of causes with the increase of our knowledge. Does anyone suggest that no patient died from lymphadenoma before the time of Hodgkin, or from tuberculous caries of the spine before Pott described that condition? I ask that question because I recently heard a speaker at a meeting of a medical society contend that nephritis had been on the increase ever since the first issue of the Registrar-General returns in 1837. He did not mention the fact that Richard Bright did not publish his famous "Reports of Medical Cases" until 1827.

Two other points remain to be mentioned. The first is that the National Health Insurance scheme has given large sections of the community more facilities for medical aid than was previously available to them. Hence earlier detection and hospitalisation of cases—and further vitiation of comparisons based on statistics of the present and former times.

The second point is that Dr. J. C. Dunlop, formerly Registrar-General for Scotland, after examining the statistics of causes of death in Great Britain for the period 1911–1928, came to the conclusion that approximately three-quarters of the observed increase in the death-rate from cancer (all forms) could be accounted for by the ageing of the population, leading to larger numbers living in those ages in which the cancer death-rate is high. He also gave as his opinion that the remainder of the increase, subject to an exception in the case of mammary cancer, could with reason be attributed to the better recognition of cancer. (Trans. Med. Chir. Soc. Edin., 1929–30, xliv.)

I am, Sir, yours faithfully,

J. A. STRUTHERS.

Wimpole-street, London, W., June 10th, 1932.

APPENDICITIS

To the Editor of THE LANCET

SIR,—In the discussion on the treatment of acute appendicitis which Sir James Berry's address has aroused I suggest that actual experience as recorded day by day in a surgeon's life is of more value than impressions and recollections, for these are particularly fallacious when the disease is one, as in this instance, which varies so enormously in its severity and in the course which it runs and which above all is distinguished by its treachery.

I have for some years kept my own notes on all my cases of acute appendicitis whether in hospital or in private practice; these notes have all been made by me at the time the patient was under treatment, and present therefore a more uniform and reliable source of information than those obtained by searching through hospital records months or years after the patient has been dealt with. In the belief that these are accurate and have certainly not been compiled with any idea of discrediting the expectant treatment of acute appendicitis (of this my own colleagues in Manchester will, I am sure, acquit me) I submit them to Sir James Berry and those who share his views.

In a consecutive series of 334 cases of acute appendicitis which have been under my care in the past few years, and from which no cases are excluded except a few who were clearly settling down when first seen and one patient (not operated upon) who was dying of appendicular general peritonitis 56 hours after the onset: of these 334 cases, 260 were treated by immediate operation and 11 of these died (case-mortality = 4 per cent.). In the other 74 cases expectant treatment was attempted, always in hospital or nursing home, and of these six died (case-mortality = 8 per cent.). The 260 treated by immediate operation include 87 early and unperforated appendices many

of which however were gangrenous, and in this subgroup there was one death and that due to pulmonary embolism ten days after operation. The 74 patients with whom expectant treatment was attempted were mainly cases of (apparently) localised peritonitis which I believed likely to settle down or at the worst to form a well-localised abscess; a few of them were submitted to this treatment because, by reason of age, obesity, or bronchitic troubles, they were regarded as poor subjects for an abdominal operation in the presence of an active infection. But in no case was the gravity of the disease itself regarded as an indication for expectant treatment; the group of 260 immediate operations is loaded with the whole of this class. Of the 74 patients treated on expectant lines, 39 settled down without operation of any kind and, after allowance has been made for the interval appendicectomy which nearly all underwent subsequently, it can confidently be reckoned that these suffered less disturbance and a shorter period of incapacity and caused less work to the nursing staff than they would had they been operated upon in the acute stage. On the other hand 35 did not settle down; in many of these operation was resorted to within two or three days on account of exacerbation of the disease and deterioration in the condition of the patient; in the others and at a rather later stage operation for evacuation of an abscess was performed. The six deaths, of course, occurred in these 35 patients. It may be said that greater faith and persistence in expectant treatment might have reduced the number of these deaths, but I am very sure that some of the patients who survived only did so as a result of timely interruption of expectant treatment by the decision to operate; several times it was plain to me that, though the patient recovered, the delay in operating had narrowed his margin of safety and lengthened his period of illness.

It is impossible here to discuss the many points raised by such figures, but from a consideration of them and of my much larger previous experience I feel strongly that Sir James Berry advocates the expectant treatment of acute appendicitis on much too generous a scale; that there is an important place for this type of treatment I firmly believe and advocate, but it is a very limited place and one which should be marked off by definite boundaries. Sir James Berry in his too optimistic view of the prospects of expectant treatment naturally fails to make adequate recognition of the importance and value of the early operation. I do not think any surgeon who has had extensive personal experience in this branch of surgery during the whole of the past 25 years can doubt that the very early operation for acute appendicitis represents one of the greatest advances in abdominal surgery during this important period of its evolution. It is in consequence of the increasing recognition of this that it is now usual for a surgeon to be called in within a few hours of the first symptom. If the annual statistics for the past ten years of any large hospital are examined I believe it will invariably be found that the case-mortality of acute appendicitis has substantially fallen and that this reduction is due to the increasing proportion of early cases. Certainly the statistics of the Manchester Royal Infirmary (where some 800 cases are dealt with annually) show this.

In conclusion, in so strongly advocating the early operation I do not wish to appear to suggest that this should be performed in every case without regard to the condition of the patient (his age, health, and build) or to the personal resources and equipment of the surgeon.

I am, Sir, yours faithfully,

Manchester, June 7th, 1932. H. H. RAYNER.

THE PREVALENCE OF APPENDICITIS

To the Editor of THE LANCET

SIR,—In continuation of my letter last week may I add that the number of cases of appendicitis under treatment at the London Hospital for the year 1930 was 472. For this information I am indebted to Mr. Stanford Howard.

I am, Sir, yours faithfully,

Harley-street, W., June 13th, 1932. W. H. BATTLE.

TRANSURETHRAL PROSTATECTOMY

To the Editor of THE LANCET

SIR,—In Dr. Hugh Cabot's article (THE LANCET, June 11th, p. 1243) the following is the opening paragraph:

"Without going too far back into the more or less accidental performance of prostatectomy, one may date the intentional operation for removal of obstruction from those put forward almost simultaneously by McGill in this country and Belfield in the United States. These were in the later 'eighties of the last century. They were not prostatectomies as we now think of them, and though performed by the suprapubic route, were only partial operations and for this reason only partially successful."

It appears to be impossible to make the profession realise that though McGill's work began with nibbling operations upon the prostate, with removal of projecting lobes, and with other partial excisions, it culminated in the removal of the whole prostate, by precisely the same method as we employ to-day. I am sure my old friend Dr. Hugh Cabot does not desire to do injustice to a great surgeon. He would be at once convinced as to the truth of the claim made for McGill by examination of the specimens removed at all his operations; they are still in the Leeds Museum. We possess also the old wooden table upon which McGill placed his patients in the Trendelenburg position which, as many forget, was introduced not for gynæcological but for vesical operations.

I am, Sir, yours faithfully,

MOYNIHAN.

Portland-place, London, W., June 11th, 1932.

To the Editor of THE LANCET

SIR,—Your leading article suggests that transurethral prostatectomy is not employed by surgeons in this country. This is not the case. The indications for this treatment were given in a paper published by me in the *British Medical Journal* in 1926 (vol. i., p. 94). I have found no reason to alter my views. Though I have tried all the newer instruments, I still employ my old technique. All the cases have done well and there has been no tendency for a stricture to form. But it is most important to select suitable cases. I am certain it is useless where the lateral lobes are involved and also in malignant disease. Of the cases with prostatic symptoms which I see in consultation I advise operation in about 60 per cent. And of cases operated upon, transurethral diathermy is employed in about 20 per cent. That is the result of 14 years' experience of this work. If the method is employed for unsuitable cases, it will fall into disrepute. For, when there is a general adenomatous enlargement of the prostate, the obstruction is throughout the urethra. It is difficult to remove it; and, as the pathological condition is a progressive one, it is liable to recur.

I am, Sir, yours faithfully,

Cardiff, June 12th, 1932. T. E. HAMMOND.

DR. ALFRED COX TESTIMONIAL FUND

To the Editor of THE LANCET

SIR,—We feel sure that many of your readers would like to be reminded that the end of the current month closes the term of contribution to the above fund, which is being raised as a token of recognition of the devoted services of Dr. Alfred Cox to the interests of the medical profession.

The response has been good; the excellent portrait, by Sir Arthur Cope, is in the Royal Academy, and the committee are now especially concerned that a larger number of names may be inscribed in the presentation book, which we know Dr. Cox will particularly value.

We would urge those who have not already subscribed to send in their names and addresses, together with a small contribution (in no case to exceed 10*s.*, and the amount does not appear in the list) to the hon. treasurer of the British Medical Association, Tavistock-square, W.C.1.

We are, Sir, yours faithfully,

HUMPHRY ROLLESTON,
Chairman, General Committee.
EWEN J. MACLEAN,
Chairman, Executive Committee.

June 6th, 1932.

*** Dr. Cox's claim on the respect and regard of the medical profession is such that no words from us could make it stronger. Intending subscribers to the Testimonial Fund, which should imply all medical men who have not yet subscribed, will surely heed the request here made.—ED. L.]

TRAINING IN TUBERCULOSIS

To the Editor of THE LANCET

SIR,—It is to be hoped that Dr. Davidson's timely letter and the discussion it has aroused will result in some practical solution of a grave problem. So far back as 1912, in the report of the Departmental Committee on Tuberculosis, special reference was made to medical education. The Committee were of opinion that additional facilities should be afforded to medical students and practitioners to acquire familiarity with the methods of diagnosis of tuberculosis, more especially in its earlier manifestations, and with its treatment. And they made these recommendations, among others:

1. Medical students and practitioners should be afforded facilities to attend at tuberculosis dispensaries and sanatoria.
2. It is advisable that the tuberculosis dispensaries should, where possible, be directly associated with schools of medicine.

Despite these recommendations, medical training in tuberculosis is still deplorably bad and, with few exceptions, there is little or no coöperation between hospital and dispensary. Unless steps are taken to remedy this lack of organisation, the present mortality figures (over 700 deaths per week in England and Wales alone) of a preventable disease are likely to remain at a standstill.

There is another point on which I would lay emphasis. At the tuberculosis dispensaries there is an abundance of clinical material illustrative of all diseases of the respiratory tract, including many of the most important non-tuberculous conditions. My own experience of work at a chest clinic is that the latter form 50 per cent. of the new cases sent up for opinion, though they are frequently labelled as tuberculous. Students would therefore have the best opportunity at such clinics of learning the differential diagnosis of pulmonary disease with special reference to pulmonary tuberculosis.

The machinery for coöperative organisation exists, and only needs to be put in motion. It may be that the hospital authorities would demand some alterations as regards the details of dispensary work, and indeed I believe that some reorganisation of the dispensary system as such is necessary, and that I have already advocated (*Brit. Jour. Tub.*, July, 1931).

I am, Sir, yours faithfully,

Harley-street, W., June 6th, 1932. PHILIP ELLMAN.

THE OBSTETRIC FORCEPS AND ITS USE

To the Editor of THE LANCET

SIR,—I have read the very interesting paper written by my late colleague Mrs. Dobbin Crawford and I should like to comment upon the sentence:—

"The application of forceps is only a success—as stated by Berkeley—when their use leaves the mother no worse off than she was before their application, and when the child is born alive."

In my opinion these words under-estimate the high standards which Mr. Comyns Berkeley, Mrs. Crawford, and all other expert obstetricians demand of themselves and, therefore, are not the best teaching to give to students. From the baby's point of view the success of a forceps operation is measured not merely by his life but by his health; he must be born alive *and undamaged*.

Neonatal medicine has made great strides in recent years and the status of the new-born infant is advancing rapidly; it is possible to record great improvements in both diagnosis and treatment of the various injuries which may be suffered by the baby during delivery. But prophylaxis must always be the main object in view, and it is essential that students should be taught the ideal towards which they must strive. No student could do better than learn, as so many have in the past, by attending Mrs. Crawford in her practical work; but those who can learn from her only by reading this paper might fail to grasp the full meaning contained in the one sentence to which I call attention. I am, Sir, yours faithfully,

Liverpool, June 13th, 1932. NORMAN B. CAPON.

THE PREVENTIVE SIDE

To the Editor of THE LANCET

SIR,—The medical profession are frequently criticised for paying insufficient attention to the preventive side of medicine. Sir Arthur Newsholme, Sir George Newman, and now Mr. Somerville Hastings are prominent in stressing this failure. Let us examine this criticism a little more closely.

What diseases are, in fact, preventable wholely or in part? Excluding diseases preventable by public sanitation, port quarantine, good housing, and sufficient food, there remain a moderate number of preventable diseases which can be grouped as follows:

Group I.—Small-pox, diphtheria, and possibly tuberculosis, which can be prevented by immunisation.
Group II.—Industrial diseases.
Group III.—Venereal disease, which can largely be prevented by individual prophylaxis.
Group IV.—Hereditary mental disease and deficiency, which can in part be prevented by sterilisation and segregation.
Group V.—Diseases which are essentially within the province of general practice, such as arise from focal sepsis, overfeeding, overdrinking, oversmoking, obesity; from improper food, clothing, and footwear; from obstetrical injuries.

Now practitioners are constantly urging their patients to have their infected teeth or tonsils dealt

with. How often do patients take their advice before the actual onset of rheumatism? Very seldom in my experience. To point out the disfigurement from bad teeth is ten times as effective. How often do patients diet themselves rigorously to prevent the onset of obesity? Very seldom. Yet, when fashion so decrees it, everyone diets at once. It is the same story with foot deformities, the result of narrow pointed shoes. The individual is equally indifferent to possible future ill-health to himself or his children resulting from small-pox, diphtheria, industrial diseases and accidents, and mental diseases. An exception is venereal disease, for the prevention of which individual prophylaxis has had a very definite success.

The lesson is that the individual will only bestir himself for an immediate danger to health, but more distant dangers are ignored and probably always will be. Is the medical profession to be blamed for this fundamental trait in human beings? The State can compel the individual to take the necessary precautions as is done in industrial diseases and, half-heartedly, in small-pox. But the record of our State medical officials is none too brilliant. They did nothing for the prophylaxis of venereal disease, being content themselves to treat end-results, and in the prevention of the increasing menace of mental deficiency and insanity their record is bad. They obstructed the dissemination of contraceptive knowledge to the poor.

I am, Sir, yours faithfully,

Bridlington, June 13th, 1932. P. D. H. CHAPMAN.

THE KING'S COLLEGE HOSPITAL SCHEME

To the Editor of THE LANCET

SIR,—The attention of the medical board of King's College Hospital has been directed to the article published in your issue of May 28th (p. 1172) and to subsequent correspondence upon this subject. While not admitting the accuracy of all the statements made, I beg to inform you that the arrangements are under discussion by the committees concerned. The steps which are being taken will, I confidently hope, remove the objections raised. I need not assure you that the medical staff at King's College Hospital would strongly discountenance any procedure not in accordance with the traditions of medical practice.

I am, Sir, yours faithfully,

W. GILLIATT, M.D., F.R.C.S.,
Chairman of the Medical Board, King's College Hospital.

June 14th, 1932.

FREE TREATMENT AT VENEREAL CLINICS

To the Editor of THE LANCET

SIR,—While endorsing the remarks of Dr. Wansey Bayly and Dr. Browdy, I am inclined to add the trite comment that in lean periods, which we have had before, it is possible to become over-pessimistic. A greatly esteemed surgeon and teacher, interested in social phenomena, used to point out to his classes the close relationship existing between the rise and fall in the incidence of venereal disease and similar movements in the graph of business activity. In its economic effects business depression attacks all fluctuating incomes, including those of medical and surgical specialists without exception, dentists, barristers, architects, and others. It is undoubtedly true that there are V.D. patients attending public clinics who in ordinary circumstances would demand something better; but when a pukka chartered accountant sells you your ticket for the greyhounds is it, after all, so very surprising?

A reform considerably overdue is the removal of the crude V.D. advertisements from public lavatories, an illustration of bureaucratic medicine at its worst. Unless meant to direct strangers in London or elsewhere the posters serve no useful purpose, for they offend many well-disposed persons and by promoting ribald remarks are very largely self-destructive, cost the public something, and constitute a standing offence to many decent-minded people. Large numbers of children visit public conveniences, and I know of nothing more embarrassing than trying to evade the searching questions of small boys and girls curious to know, "What are secret diseases?" and "What sort of a place is St. Swithin's Hospital?"

I am, Sir, yours faithfully,

H. D. L. SPENCE.

Great Russell-street, W.C., June 13th, 1932.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED JUNE 4TH, 1932

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 49 (last week 68); scarlet fever, 1502; diphtheria, 709; enteric fever, 23; acute pneumonia (primary or influenzal), 675; puerperal fever, 54; puerperal pyrexia, 96; cerebro-spinal fever, 51; acute poliomyelitis, 4; encephalitis lethargica, 14; dysentery, 13; ophthalmia neonatorum, 102. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on June 7th–8th was as follows: Small-pox, 81 under treatment (last week 84 under treatment and 2 under observation); scarlet fever, 1526; diphtheria, 1317; enteric fever, 10; measles, 2211; whooping-cough, 396; puerperal fever, 15 (plus 5 babies); encephalitis lethargica, 227; poliomyelitis, 3; "other diseases," 99. At St. Margaret's Hospital there were 15 babies (plus 8 mothers) with ophthalmia neonatorum.

Deaths.—In 117 great towns, including London, there was no death from small-pox, 2 (0) from enteric fever, 73 (29) from measles, 7 (3) from scarlet fever, 32 (10) from whooping-cough, 21 (5) from diphtheria, 59 (11) from diarrhœa and enteritis under two years, and 33 (5) from influenza. The figures in parentheses are those for London itself.

The fatal cases of enteric fever outside London occurred at Manchester and Ipswich. Liverpool reported 18 deaths from measles and 6 from diphtheria. Four fatal cases of whooping-cough occurred at Liverpool, 3 each at Birmingham and Walsall.

The number of stillbirths notified during the week was 294 (corresponding to a rate of 39 per 1000 total births), including 40 in London.

FATAL CASE OF SMALL-POX.—The case in which small-pox was mentioned as the cause of death in the return for the week ended May 28th was that of a man, aged 56, admitted to Queen Mary's Hospital, Sidcup, on April 19th, from Lambeth Hospital, where he had been since March 9th suffering from myeloid epulis, which was being treated with radium. On arrival at Queen Mary's Hospital, Dr. C. Ellingworth informs us, he had considerable radium reaction about the face and swallowed food with difficulty. He had some pyelitis and had been treated with hexamine. On May 3rd he complained of headache, and he was found to have a temperature of 103° F., with some slight abdominal pain and crepitations at the base of both lungs. The urine was free from albumin. On the morning of May 7th he developed a papular rash on the forehead and hands which was rather mixed up with the radium irritation. Dr. H. M. Pereira, who was called in consultation, confirmed the diagnosis of small-pox, and the patient was removed to Longreach Hospital, where he died. Dr. D. M. Connan tells us that the cause of death was certified thus: 1. (*a*) Myeloid epulis. (*b*) Pyelitis. 2. Small-pox discrete; vaccinated in infancy.

THE SERVICES

REVISION OF THE ARMY MEDICAL SERVICES

REORGANISATION in the Medical Services of the Army has been announced which should result in consolidating and extending the teaching, research work, and the professional opportunities of officers of the R.A.M.C. and in enhancing the status of the Royal Army Medical College. After the Great War a great advance was made in coördinating the professional activities of the Corps by the creation of Directorates of Hygiene and Pathology, with Advisory Committees of eminent civilian doctors, and by the appointment of a Consulting Physician and a Consulting Surgeon to the Army from among the serving officers of the Corps.

The War Office statement continues:—

Owing to the large size of the Army at that time, these directorates and appointments were located at the War Office as part of the staff of the Director-General, Army Medical Services. Now that the size of the Army has been reduced and more largely concentrated in the principal military stations, the organisation of the medical directorate has permitted of some decentralisation and the opportunity has been taken to concentrate at the Royal Army Medical College the heads of all the specialist branches of medicine and surgery. The revision of departments involved has been secured by transferring the Director of Pathology, the Consulting Physician to the Army, and the Consulting Surgeon to the Army, from the War Office to the Royal Army Medical College and absorbing the appointments of Professors of Pathology, Tropical Medicine, and Military Surgery respectively. Each of these officers will as at present have an assistant professor under him, and in the case of medicine and surgery these officers will form the visiting medical and surgical staff of the Queen Alexandra Military Hospital, Millbank. The Director of Pathology will still control the pathological work in commands as well as carry on his professorial work. The teaching staff of the College will now become the consultants and advisers of the Director-General, Army Medical Services, at the War Office, and will be available for consultation in Commands when required. The composition and location of the Directorate of Hygiene has not been changed. The consultant and professor in each case, though normally of colonel's rank, may be promoted to major-general should he come up for promotion in the ordinary course while holding the appointment. The appointment of Commandant and Director of Studies at the College will, in future, carry with it the rank of major-general, but on the other hand the Deputy-Director, Army Medical Services, at the War Office will, when the next appointment is made, be a colonel instead of a major-general. Thus, of the possible 11 major-general's appointments open to Royal Army Medical Corps Officers, five are now of a professional nature and six administrative.

This is a definite step forward in the professional work of the Corps, whose advance has been evident since the war. It should do much to remove the erroneous impression that adequate professional work is unobtainable in the Army. In consequence also of the elaboration of motor transport in recent years many of the smaller hospitals in commands have been closed and the patients concentrated in central hospitals fully equipped with all the special departments made necessary by modern methods of diagnosis and treatment. This has resulted in specialisation in all branches of medical, surgical, and pathological work being now the rule rather than the exception.

A civilian inspector of the teaching and civilian examiners will be appointed by the Director-General A.M.S., after consultation with the Presidents of the Royal College of Physicians of London and the Royal College of Surgeons of England, thus promoting uniformity in the educational courses of R.A.M.C. officer and the civilian doctor.

NEW APPOINTMENTS.

As a result of the revision Colonel John Weir West, C.M.G., and Colonel Ralph Bignell Ainsworth, D.S.O., both late R.A.M.C., are promoted Major-Generals as from June 15th.

Major-General West, Hon.-Surgeon to H.M. the King, and late A.D.M.S. for the Burma District, and Consulting Surgeon to the Army, resumes the latter status in becoming Professor of Military Surgery at the R.A.M. College.

Major-General Ainsworth, Hon. Physician to H.M. the King, continues to occupy his post as Commandant and Director of Studies at the College, the post having now become one to be held by a Major-General.

The *London Gazette* also announces:—

Colonel A. C. H. Gray, O.B.E., M.B., K.H.S., late R.A.M.C., from Director of Pathology, War Office, to be Director and Professor of Pathology, Royal Army Medical College.

Lieutenant-Colonel and Brevet Colonel (temporary Colonel) W. P. MacArthur, D.S.O., O.B.E., M.D., F.R.C.P.I., K.H.P., from Consulting Physician to the Army, to be Professor of Tropical Medicine, Royal Army Medical College, and Consulting Physician to the Army.

Major and Brevet Lieutenant-Colonel J. M. Weddell, F.R.C.S., Royal Army Medical Corps, from Professor of Military Surgery, to be Assistant Professor of Military Surgery, Royal Army Medical College.

Major J. Heatley-Spencer, O.B.E., M.D., Royal Army Medical Corps, from Professor of Tropical Medicine, to be Assistant Professor of Tropical Medicine, Royal Army Medical College.

Lieutenant-Colonel H. M. J. Perry, O.B.E., Royal Army Medical Corps, from Professor of Pathology, to be Assistant Professor of Pathology, Royal Army Medical College.

ROYAL NAVAL MEDICAL SERVICE

THE following appointments have been notified: Surg. Comdrs. F. C. Wright to *Colombo*, and E. St. G. S. Goodwin to *Pembroke*, for Chatham Barracks. Surg. Lt.-Comdr. A. G. L. Brown to *Curacoa*.

ROYAL NAVAL VOLUNTEER RESERVE

Surg. Lt.-Comdr. R. Erskine-Gray to *Pembroke*, for Chatham Hospital.

Surg. Lt. E. R. G. Passe to *Victory*, for Haslar Hospital.

ROYAL ARMY MEDICAL CORPS

The undermentioned Lts. to be Capts.: R. R. Leaning and W. G. Harvey.

Lt. C. J. Dobbin relinquishes his temp. commn.

TERRITORIAL ARMY

Capt. L. F. E. Jeffcoat to be Maj.

INDIAN MEDICAL SERVICE

Lt. (on prob.) G. R. M. Apsey to be Capt. (prov.) (on prob.).

AUXILIARY AIR FORCE

Flying Officer H. W. Walter is promoted to the rank of Flight Lieutenant.

ORDER OF THE NILE

The King has given to Major Robert George Archibald, C.M.G., D.S.O., licence to wear the Insignia of the Second Class of the Order of the Nile, conferred upon him by the King of Egypt, in recognition of valuable service rendered while in the employment of the Sudan Government.

INTERNATIONAL CONGRESS FOR LIGHT.—The second International Congress for Light (biology, biophysics, and therapeutics) will be held at Copenhagen from August 14th to 18th, under the presidency of Dr. Axle Reyn. The principal subjects of discussion will be: the action of the general light baths in tuberculosis; climatological research in its relation to public health; instruction in actinology; the rôle of pigment in light biology; and the therapeutic effect of general light baths. A report will be presented by the international committee for the determination of a standard unit of measurement for ultra-violet radiation, and a morning will be devoted to demonstrations at the Finsen Institute. Speakers from England will include Sir Henry Gauvain, Sir Leonard Hill, and Dr. W. Kerr Russell. During and after the conference there will be opportunities of seeing the neighbourhood, and on August 19th and 20th it will be possible to visit Odense, the Julemærke Sanatorium and Vejlefjord Sanatorium, returning via Hamburg. Excursions to Sweden and Norway can be arranged.

OBITUARY

WILLIAM WILLIAMS KEEN, M.D.

EMERITUS PROFESSOR OF SURGERY, JEFFERSON COLLEGE, PHILADELPHIA

WE regret to announce the death on Tuesday, June 7th, of Prof. William Williams Keen, the American surgeon of international fame, in his 96th year. In him the medical profession loses a leader of surgical thought and accomplishment whose practical teaching of his subject ranged from 1866 to 1907, just over 40 years.

William Williams Keen was born in Philadelphia in 1837, only 60 years after the American Declaration of Independence. He was indeed a link with history.

PROF. W. W. KEEN

In 1853 he completed his preliminary education at the Philadelphia High School and entered the Brown University with the original intention of becoming a clergyman, but the study of chemistry and physics decided him to enter for medicine. In 1861 the American Civil War broke out and although not yet qualified he served with the troops in a medical capacity while he contrived to continue his professional studies. These he completed in 1862 and re-entered the Army with his qualifications. On leaving the Army he came into close contact with Weir Mitchell, already a physiologist whose work was known in Europe, and he collaborated with him and Morehouse, his junior, in the publication of some interesting papers on neurological surgery, then quite a new subject. Two years of post-graduate work in Paris, Vienna, Berlin, and London followed, and in 1866 Keen returned as head of the Philadelphia School of Anatomy and began to teach anatomy and operative surgery and surgical pathology. He competed unsuccessfully for the chair of anatomy at the Jefferson College, but many years later was appointed to that of surgery, having in the interval held other teaching appointments and secured a very large surgical practice. At Jefferson College, until his retirement in 1907, he taught increasingly large classes of students and established a surgical clinic of the first importance, so much so that when, in 1907, having reached his seventieth year, he made an extended tour round the world, he found his former pupils in almost every country that he visited.

Prof. Keen was a prolific author alike on surgical and on religious and social subjects, and always his views were fearless and clear-cut and revealed him as a great controversialist, simple in expression, reasonable, and direct. He wrote an early history of practical anatomy, a history of the first Baptist Church of Philadelphia, and a work on the Surgical Complications of Typhoid Fever—these in sequence. He collaborated with Dr. William White in an admirable treatise on surgery generally, he edited Heath's Practical Anatomy, he published numerous collections of essays and addresses on such themes as animal experimentation, the treatment of war wounds, early professional developments in the United States, and artistic anatomy, and he contributed to and edited Keen's System of Surgery.

Necessarily such a veteran was the recipient of many honours, and Keen held honorary degrees as M.D., LL.D., Ph.D., or Sc.D., from (among others) the Universities of Harvard, Yale, Toronto, St. Andrews, and Upsala; he was an hon. F.R.C.S. of England, Edinburgh, and Ireland, and had been president of the American Surgical Association and of the College of Physicians in Philadelphia, while he presided over the International Congress of Surgery in Paris in 1920. His long and valuable life was essentially a happy one. He was devoted to his profession in every aspect, he rejoiced in his deeply held religious convictions, and he had a remarkable gift of making friends.

Lord Moynihan allows us to publish the following notes of his personal relation with William Williams Keen:—

"Dr. Keen's death, at the age of 95, will be deeply mourned by the multitude of his friends in all parts of the world. A man's age is not to be counted by the years he has lived, but, in many cases at least, by the freshness of his enthusiasms. Dr. Keen's eagerness in every form of intellectual pursuit never ceased to astonish his friends, sometimes even perhaps to embarrass them, for in pursuit of knowledge he spared no man! In England Dr. Keen found many men who regarded him with warmest affection, and with admiration for his pioneer and long continued service to the cause of surgery. His reputation became international half a century ago; 32 years ago he was made an Honorary Fellow of the Royal College of Surgeons of England, and in praise of Lister then made a speech which none who heard it will ever forget.

"As an author he was prolific. He wrote, with Dr. William White, a Text-book of Surgery, which was the first in our language to be based upon bacteriology; it almost alienated our affections from 'Erichsen.' Many men considered him—though having heard Nicholas Senn and J. B. Murphy, I could never agree—the greatest teacher of clinical surgery America had ever known. His virility and force were well matched with sincerity and invulnerable accuracy, and tempered with sobriety; authentic qualities expressing his own character and habits of thought. He was the protagonist of those ideas to which most members of our profession adhere in relation to vaccination, vivisection, laboratory research. The public in America regarded him as the incorruptible champion of medicine. With him controversy was never coarsening. He was a man of decided views emphatically expressed; but he was, no less, the very flower of culture, the very perfume of courtesy. He bore himself on all occasions with a genial simplicity, and showed a fine sense of respect for opposing views which disarmed criticism and often encouraged agreement.

"He had the happiest knack, excelled not even by Osler, of keeping in touch with his friends in all lands. I have a number of his letters, many written after he was 90 in most beautiful script, and with the steadiest of hands. Since he first stayed with me 25 years ago almost every letter of his bore a reference to some incident that had then occurred, to some member of my family, or to some plan maturing for our next meeting. It was justly said of Osler that many men in many lands hugged the belief that they were his particular cronies. That was certainly true in regard to Keen.

"Keen was one of the very first surgeons in the world to realise the truth and high importance of Lister's teaching. His great predecessors, Gross and Agnew, had laboured under the tyrannies of almost inevitable, raging infections. Keen helped to inaugurate the new era. His work on the brain, nervous system, abdominal organs, upon the ravages of typhoid fever in their surgical relations, indeed upon all branches of surgery—and he practised all with immense success—was perhaps the most considerable and the most inspiring of that of any surgeon in the States. The simplicity and flawless integrity of his life, his exquisite sense of humour, his power of provoking it, and his capacity for swift and often unanswerable reply, all helped to create a personality that no man who knew him will ever be able to forget. He once told me that the secret of life was to mix merry laughter with earnest labour. He, most assuredly, proved that to be true. If wisdom is a right conception of the ends of life, my very dear old friend Dr. Keen was indeed among the wisest of men."

PARLIAMENTARY INTELLIGENCE

NOTES ON CURRENT TOPICS

Patents and Designs Bill

IN the House of Commons on Tuesday, June 7th, Mr. HORE-BELISHA (Parliamentary Secretary to the Board of Trade) moved the second reading of the Patents and Designs Bill which, he said, was to give effect to the recommendations of the Departmental Committee.

Sir F. E. FREMANTLE said he wished to raise the question of the patenting of food and drugs, and to call attention to a point of great and growing importance which was omitted from the Bill designedly because of the difficulty of the subject. He would like to ask for some explanation of the attitude of the Ministry in regard to this most important point. He did not think it was sufficiently known that the patenting of a large number of the most important medical drugs and medicines recently discovered was subject to a patent law which had unfortunately put our research at the mercy of certain foreign countries.

VITAMINS

The position was quite extraordinary. He thought most people would know the vital difference to the foods of the country between fresh butter and margarine. Margarine was coming more and more into use naturally enough, and yet it had been discovered of recent years that what it really lacked was a certain substance called vitamin D. The discovery of vitamin D was made only a few years ago, and it was due to research in this country when it was discovered how by the use of ultra-violet rays it could be produced out of a certain material called ergosterol. Unfortunately the patent for the manufacture of this vital material was taken out by a worker in an American university, and it was known as the Steenbock patent. It gave patent rights over not only America, but all other countries, including this country, for all forms of manufacture of vitamin D. Prof. Steenbock gave the patent rights over to the universities, and the universities submitted it to a committee and it was run by the committee for the benefit of that university. The patent rights were made out with definite conditions in this country which were found to be very hampering to research. It was considered that the patent ought not to cover the more modern processes which had not been discovered there but here, and would, as was the custom in this country, be given to the research workers for their free use. The university had built up very large sums and was a wealthy corporation, and no one cared to challenge their rights. They were extracting large royalties from all who used this process of treatment of our food, and they were also hampering our research work. A large amount of the very best work was done in these subjects by the big manufacturing houses, but they found it more worth while to pay the royalty rather than fight a corporation of that sort. They paid the royalties themselves and passed it on to the consumer, so that our consumers suffered because our patent rights were not sufficient to protect us against the patent rights taken out in America.

BIOLOGICAL PRODUCTS

In the same kind of way we were at the mercy of a foreign patent with regard, for instance, to the subject of insulin. When insulin was discovered in Canada the patent right was given over to a Canadian university, which most nobly gave it to our Government and our Government passed it on to the Medical Research Council, and they were able to use the patent rights in insulin and to prevent any commercialisation of it which would have been fatal to a large number of our people, and they had seen that it was properly used and produced. There was a third product, the discovery by Dr. and Mrs. Dick working together in Chicago. They discovered the toxin and the antitoxin for scarlet fever. They took out patent rights and gave them to the University of Chicago. They were used commercially and mercilessly by the committee running the trust, and the result had been to hinder and to stop very largely research in this country.

OPEN DOOR FOR RESEARCH

These matters were put before the Board of Trade by the Medical Research Council three years ago, with a view to giving evidence before the Departmental Committee upon whose report this Bill was founded, yet no action had been taken officially to incorporate their representations in this measure. He maintained that that was a most serious blot, although there might be good reasons for their omission. Perhaps it might be one of expediency. It was a very difficult subject, and he felt that the matter required considerable explanation. If the Board of Trade were able to give good reasons for not including this most important principle in this measure he hoped that they would be able to give some kind of undertaking that they were seriously considering this matter, which went right to the root of the health of the people of the country. It was a matter which required investigation, even if it could not be brought in as an amendment to the Bill. A conference was held by the British Medical Association which was also attended by the President of the College of Physicians and Surgeons and members of the Medical Research Council, during which the matter was gone into, and they came to the conclusion that they would first of all see the Board of Trade and having seen them they were asked to consider whether it was not advisable to move an amendment to the measure. They had been asked not to move any amendment at the present time. They could only implement that undertaking if they were given some pledge from the Board of Trade that they recognised the seriousness of the position. The matter required a good deal of international work, and required a good deal of thought as to what they could do in this country. The medical profession definitely maintained that the results of research should be open to everybody and above board, and should be applied to universal use, and that there should be no patent rights whatever as regards what were called animal medicines and products, vitamins, sera, antitoxins, and the rest of them. No patents should be allowed whatever which were a disadvantage to other countries. As regarded synthetic compounds made by chemical drug houses and so on, it would be impossible

that patents should be given for those purposes, but as a common practice and a right one in this and other countries medical men should not be allowed to take out patents to make a profit by them. It would be compulsory, as the conference suggested, that patents for such articles for medical use should be dedicated to universities or some public trust or body for general use. They required legislation to deal with all these matters. No doubt the League of Nations and their work and international matters come in, but it took a long time to get anything through the League of Nations, as they knew full well, or internationally. In the meantime they ought to act. There were signs that they were not acting and that the Department did not understand these things, and that the Government were paying no attention whatever to them. He hoped that they would receive some explanation from the Board of Trade that they realised the seriousness of the situation and that they would do something to consider the matter in due course.

THE QUESTION OF EXPROPRIATION

Sir STAFFORD CRIPPS said that there was one way in which the difficulty referred to by Sir F. E. Fremantle could be overcome, and that was by giving the Government power to expropriate patents. At present the Government had that power in respect of inventions for warlike purposes. He (Sir S. Cripps) did not see any reason why a useful article, such as some medical or food product, should not also be subject to acquisition by the Government in the same way. There was no reason why an invention should not be capable of being put into safe custody to be used under the disposition of the Medical Research Council or other such body for the benefit of the whole country.

Sir BOYD MERRIMAN (Solicitor-General), after giving an assurance that any representations with regard to amendments to the Bill would be carefully considered by the Government in Committee, said that there was already power to compel people to make anything which was the subject of a patent available for public service. That involved payment of royalties to the inventor, and he thought that there was no more reason why a person who had spent his life in research and invention in connexion with health should be deprived of the fruits of his labours than any other inventor. The Government were not prepared as at present advised to consider any question of expropriation without compensation of any form of invention. (Cheers.)

Sir STAFFORD CRIPPS said that he admitted that compensation should be paid on the same terms as in regard to munitions.

Sir BOYD MERRIMAN said that Sir F. E. Fremantle had said that anything which affected health or medical research should be made open to the public and not be subject to a patent at all. This Bill was professedly a modest Bill. It was designed to give effect to the recommendations of the Departmental Committee.

EXPLOITATION REPUGNANT TO THE MEDICAL PROFESSION

Dr. O'DONOVAN said that there was a great difference in the outlook on life between the legal and the medical profession, and it was because of that that Sir Boyd Merriman had not followed wholeheartedly the lead given him by Sir F. Fremantle. The medical profession had always resented any suggestion coming from the Government that the profession had the right to exploit the people. There was no question that patents could be used for exploitation, and the idea that the sons of Hippocrates should be unfaithful to an oath which had held for over 2000 years had been made for the first time that evening. To him the suggestion was repulsive. It was true that chemists were entitled to the result of their studies in organic chemistry, but that the results of medical research should be followed by action, and that again protected by patent, was a conception which was new to the ideals of medicine. He was grieved to hear it from the front bench, and he hoped that the point which had been put so boldly by Sir F. E. Fremantle would be borne in mind by the Government in the future discussions on the Bill.

The Bill was read a second time.

The Children Bill

In the House of Lords on June 13th the Children and Young Persons Bill was further considered in Committee. The Earl of ONSLOW (Chairman of Committees) was in the chair. Clause 48 provides that no child under 12 years shall be employed. Lord BANBURY carried an amendment to omit the provision that by-laws made by local authorities might authorise the employment of children under 12 by their parents or guardians. Viscount ASTOR moved a new clause providing that a local authority might make by-laws with respect to the employment of persons under 18 years, but not being children. The clause continued :—

(2) By-laws so made may distinguish between persons of different ages and sexes, and different localities, trade, occupations, and circumstances, and may contain provisions for prescribing: (i) The number of hours in each day or in each week for which and the times of day at which they may be employed; (ii) the intervals to be allowed to them for meals and rest; (iii) the holidays or half-holidays to be allowed to them; (iv) any other conditions to be observed in relation to their employment.

(3) Nothing in this section shall empower a local authority to make by-laws with respect to: (*a*) employment in or about the delivery, collection, or transport of goods except in the capacity of van boy, errand boy, or messenger; (*b*) employment in or in connexion with factories, workshops, mines, quarries, shops, or offices, not being employed in any capacity as aforesaid; (*c*) employment in the building or engineering trades, not being employment in any such capacity as aforesaid; (*d*) employment in agriculture; (*e*) employment in domestic service except as non-resident daily servant; provided that this section shall not come into operation until a resolution has been passed by both Houses of Parliament.

The clause was agreed to. On Clause 55, which makes provisions in regard to juveniles taking part in or being trained for dangerous performances, Lord BALFOUR OF BURLEIGH moved an amendment to delete the proviso that no girl under 18 should take part in any public performance in which her life or limbs were endangered. He said that in families of acrobats training began at a very early age. The amendment was accepted.

National Health Insurance Bill

In the House of Commons on June 13th the National Health Insurance and Contributory Pensions Bill was considered in committee. On Clause 1 Mr. LOGAN moved to leave out Subsection 1, which provides that a person who becomes employed while treated by any of the provisions of the section as insured shall not on ceasing to be so employed become entitled for that reason to extension of insurance unless during the contribution half-year in which he ceased to be employed and the preceding half-year he was employed during eight contribution weeks. He said that under this Bill the burden was to be borne by the unemployed members of the approved societies. He did not know what would happen in the near future if they denied these people medical benefits. Sir E. HILTON YOUNG said that there was no question of forfeiture of rights under this Bill. It was recognised that there would be hardship in the abrupt termination of insurance rights, and that some extension of insurance rights should be given, even beyond what was strictly legitimate on the actuarial and financial basis of the insurance scheme. The extension that was actually given was an extension of 21 months of free insurance with full benefit, and then an extended year with reduced benefits. That was a very generous extension to save the insurance of the unemployed. Under the Bill a further extension had been made, and anyone who got back to work could immediately start the whole period of

extension over again. There must be a practical test of employment, and the test was to be that the insured person must show eight stamps during a year instead of the present farcical test of one stamp.

The Duty on Beer

When the Finance Bill, as amended, was being considered by the House of Commons on report, Sir W. WAYLAND moved a new clause to restore the duty on beer to the level at which it stood before the Budget of September, 1931.

DRINK A CAUSE OF SECONDARY POVERTY

Dr. SALTER said that in opposing this new clause he spoke for himself and not for his party. The Labour party by a unanimous vote had agreed that its members should have a perfectly free hand in this discussion. At the present time there was less beer being drunk per head in this country than at any previous time in our history. Was that a national calamity? On the contrary, he said that, particularly at the present juncture, it was a national advantage. On this point the Royal Commission on Licensing, which was not composed of teetotallers, but was a very mixed body with a large majority of non-teetotallers in its composition, after 18 months consideration of the subject had expressed itself in no uncertain terms. They said in their report that "a general reduction in consumption of intoxicants ought to be aimed at," and further, that "excessive drinking still persisted in very large measure and that apart from actual intemperance expenditure on intoxicants still reached a figure which was definitely uneconomic."

He had practised as a medical man for over 30 years in one of the poorest boroughs of London and one of the poorest quarters in the whole country. During that time he had been the recipient of very intimate and very sacred confidences. He had been into many thousands of homes and had been able to watch family life from the inside, and he said without hesitation that not in the far distant past but at the present time there were enormous numbers of families whose babies were going short of milk, where children were going without boots, where the whole family happiness was being wrecked, because the father was an excessive beer consumer. Although he agreed that primary poverty was not due to drink yet a very large proportion of secondary poverty was due to drink. It was a distinct national advantage that money should be spent on household necessities rather than on alcoholic drinks.

THE CHANCELLOR'S APPEAL

Mr. CHAMBERLAIN (Chancellor of the Exchequer) said that while he had budgetted for an increase of revenue amounting to £8,000,000 from this tax he nevertheless expected that if the tax were remitted he would lose not £8,000,000 but £10,000,000. Could he afford to give away £10,000,000 in the present year? All of them, no doubt, could see reasons for hope and confidence in the future. At the same time he did not think that they could feel so satisfied that the worst was over that they could afford to sacrifice any reserves that they might have behind them. He respected the sincerity of feeling of those members who supported this clause, but he appealed to hon. Members who had been returned to support the National Government and had done so because they felt that a National Government would represent this country overseas with a prestige and authority which could not attach to any purely party Government. There was no question of the Government being defeated on this clause; they were not afraid about that, but would hon. Members, even those who felt strongly on this matter, bear in mind that a really substantial vote against the Government on a matter of such importance as this on an essential part of the Budget could not do otherwise than injure and diminish its authority. He asked hon. Members not to forget these great national and international world interests which were about to be discussed, and the future of which might perhaps be decided in the course of the next few weeks, and not take a step at this moment which might do anything to make less the influence and the power that the Government exercised.

POINT OF VIEW OF REVENUE

Mr. CHURCHILL said that he admitted the force of much of that which was said by Dr. Salter on the temperance aspect, but when they considered the progress which had been made, perhaps, he admitted, under the influence of high taxation in the past, in the sobriety of this country, no one could consider that the temperance aspect was an urgent aspect in the discussion at the present time. In 1913 there were 183,000 convictions for drunkenness, and in 1931, the last year for which they had complete figures, they had fallen to 53,000. It was perfectly clear that the temperance aspect ought not to sway their opinions about this tax at the present time and that they were entitled to look at it solely from the point of view of revenue.

WHITE BREAD WORSE THAN BEER?

Mr. MACQUISTEN said that Dr. Salter and his friends who thought like him had a sour outlook on life, and they thought that beer was bad for the health. A lot of things were damaging to health. He believed that in addition to his duties as a medical man Dr. Salter was a baker. If that was so, he might tell the hon. Member that if he lived in poor benighted Portugal, or in one or two other European countries and sold the white bread which he sold to the masses of the people in Bermondsey he would be sent to gaol for a long period for selling a substance dangerous to human health. (Laughter.) The devitalised stuff which bakers sold, with all the real good taken out of it, and lacking all the things which went to body-building and teeth making, and so on, was thoroughly bad, and the hon. Member and his friends had done more harm than all the brewers in the district round London. (Laughter.) Hon. Members had no idea of the amount of the illicit production of alcoholic liquor which was going on in this country. A favourite stuff was what was called "surgical spirits," which he was informed contained a little castor oil and a very small proportion of boracic acid and could be bought without any prescription in any chemist's shop. Then there was the spirit used by french polishers which contained only a small quantity of wood spirit and appeared to be consumed with comparative safety by many people. There was also the ordinary mineralised methylated spirit which he was told was only consumed by the most abandoned persons, and was sold in some districts in small quantities at 2*d*. or 3*d*. a time. A Government which taxed alcoholic liquors so heavily was asking for such things. Such taxation was the worst and most injurious class legislation.

THE WISHES OF THE POOR

Dr. O'DONOVAN said that a member of his own profession, like one of the sect of the Manichees, had explained to the House the evil of drink and had advised them to take to that drink which was exclusively designed by nature for the nourishment of calves. (Laughter.) He (Dr. O'Donovan) intervened in the debate only to express to the House and to the Government the wishes of the poor in his constituency. He had received, and perhaps other hon. Members had had the same experience, a petition self-organised by the poor of his constituency and signed by 6000 people asking him to do something to persuade the Chancellor of the Exchequer to lower the tax on beer. He repudiated entirely the suggestion that the poor in the mass were horrid and made up of potential drunkards The poor to-day could not afford a glass of beer. When he was a medical student there was a rhyme "A little of what you fancy does you good." When one was promoted to a higher sphere one understood that a little alcohol was an anodyne for the discomforts of this weary

world. When one was even further promoted to live among the highbrows one understood that a little alcohol removed those inhibitions which kept one in a state of chronic melancholia. (Laughter.) In English inns the greatest influences of human kindness had been cogitated by decent men for the good of their fellows. (Cheers.) He would remind the House that the London Hospital, one of the greatest in this country, was founded by a meeting of simple workpeople, business men, and merchants, in a London tavern. (Cheers.) Those who supported this new clause were animated by no spirit of animosity to the Government. They sympathised with the burden that the Chancellor of the Exchequer carried, and if they voted against him they did it for one reason—that that sore feeling of the poor should not lack registration and that this matter might be kept open for consideration at another time.

The clause was negatived.

Taxation of Research Stipends

Sir J. WITHERS moved a new clause to provide that stipends paid to research students at universities should be treated for purposes of taxation as earned income, and not as unearned income as decided recently by the Inland Revenue authorities.

Major ELLIOT said that he was glad to be able to give the assurance that where a student was getting a stipend on the terms that he devoted time research on a special subject he would be assessed under Schedule E and be eligible for earned income allowance.

The new clause was, by leave, withdrawn.

HOUSE OF COMMONS

THURSDAY, JUNE 9TH

Mentally Defective Children

Wing-Commander JAMES asked the President of the Board of Education the number of mentally defective children for whom special educational facilities had been provided in the last pre-war year and during the last three years; and the additional cost involved in the current year.—Sir D. MACLEAN replied: The average number on the registers of special schools for mental defective children were as follows: Year ended March 31st, 1914, 13,563; 1929, 15,479; 1930, 15,308; 1931, 15,269; and 1932 figures not yet available.

In regard to the last part of the question, I regret that information is not available as to the expenditure incurred on these schools as distinct from special schools for defective children of other types.

Married Women and Health Insurance

Miss RATHBONE asked the Minister of Health what would be the estimated saving to the funds of approved societies under the National Health Insurance Acts if all women on marriage were put into Class K, subject to the prov so that any woman who could prove 26 weeks of employment and of contribution subsequent to the date of her marriage and within two years of that date should be entitled to be restored to the full benefits provided by the Act, either as at present provided or, alternatively, as proposed to be applicable to married women under the Bill now under consideration.—Sir E. HILTON YOUNG replied: There are no data available for the formation of any reliable estimate of the financial effect of the change referred to by the hon. Member.

MONDAY, JUNE 13TH

The Purification of Mussels

Mr. REMER asked the Minister of Agriculture if he could make any statement as to the progress made by the experimental station at Conway for the purification of mussels; what steps he was taking, in conjunction with the Minister of Health, to make the advantages to public health more widely known; and to secure an extension of these purification tanks.—Sir JOHN GILMOUR replied: Mussels have been cleaned successfully on a commercial scale at Conway for about 15 years. The Ministry takes every opportunity of bringing the advantages of purification to the notice of those interested in shell-fish beds which have been closed owing to pollution, and acts in close consultation with the Ministry of Health in these matters. My hon. friend will be aware that a Bill introduced by my hon. friend the Member for Ormskirk to enable local authorities to provide or contribute towards the provision of means for cleansing shell-fish has recently been approved by Parliament.

Milk Reorganisation Committee

Brigadier-General CLIFTON BROWN asked the Minister of Agriculture whether he would request the reorganisation committee for milk now sitting to issue before September some announcement indicating the lines on which their proposals would be evolved, so as to help and be a guide to those engaged in fixing milk prices next autumn.—Sir JOHN GILMOUR replied: The fact that the problems confronting the milk industry are being actively investigated by the Milk Reorganisation Commission should in itself conduce towards friendly and helpful negotiation on milk prices next autumn, but while it is within the Commission's discretion to make interim representations to me if they think fit, I do not feel that it is desirable that I should give them instructions in the matter.

Cerebro-spinal Fever

Mr. GROVES asked the First Lord of the Admiralty how many cases of cerebro-spinal meningitis or other form of cerebro-spinal disease had been reported in the Navy since Jan. 1st last; how many of them had been fatal; and how many of them had been subjected to vaccination, revaccination, or inoculation during the six months prior to the attack.—Lord STANLEY replied: Ten cases of cerebro-spinal meningitis have been reported since Jan. 1st last, and four of them have proved fatal. According to available records, three of the total number had been subjected to vaccination, none to revaccination, and one to inoculation within six months of the attack. The information concerning vaccination, &c., is not obtainable in two of the cases. All were cases of epidemic cerebro-spinal meningitis ("spotted fever"), and none of them was of the post-vaccinal type.

TUESDAY, JUNE 14TH.

First-aid Equipment on Motor Vehicles

Mr. GUY asked the Minister of Transport which officials were responsible for examination of first-aid equipment when a public service vehicle was presented for licensing under the Road Traffic Act.—Mr. WOMERSLEY (Lord of the Treasury) replied: No statutory responsibility rests upon any particular official for the examination of first-aid equipment. In fact, however, it is inspected by the Public Service Vehicle Examiners when vehicles are presented for examination prior to licensing.

Imported Liquid Eggs

Mr. ANSTRUTHER-GRAY asked the Minister of Health what steps were taken by his department to ensure that liquid eggs imported into this country were certified fit for human consumption before being sold for that purpose.—Mr. ERNEST BROWN replied: Liquid eggs are subject to examination on importation into this country, and if they are found to be unfit for human consumption they may be seized and destroyed.

ASSOCIATION OF PORT SANITARY AUTHORITIES DINNER.—This Association met in London this year, and on June 9th the Corporation of the City of London entertained to dinner some 100 of its members and friends at the Guildhall. The Burgomaster of Antwerp was among the guests. The Lord Mayor and other speakers emphasised the important work done by members of the Association in protecting the country from the insidious introduction of infection, as well as in caring for the conditions of life of men on ships. The labours of Dr. Collingridge and Dr. Herbert Williams for the Port of London in the past, and the present activities of Dr. W. M. Willoughby and Dr. C. F. White were singled out for special praise. The President for the year, Mr. Cyril Gamon, referred to the loss the Association had recently sustained in the death of Dr. W. R. Dearden, of Manchester, and gave some account of the work of the Association since its formation in 1898. The prevention of the importation of infectious disease had been one of its most important duties. The methods by which this object was achieved included the circulation of information regarding the prevalence of cholera, yellow fever, plague, and small-pox in ports abroad, the devising of the procedure to be adopted when infected ships arrived in English ports, and rat repression. The Association had made representations from time to time to the Government of the day on such matters as food inspection, the medical inspection of aliens, the hygiene of crew spaces, and many of the recommendations made had been put into force. Matters dealt with during the last year had included the prevention of the importation of sterilised meat, the question of ownership of unsound food, the scale of charges for certificates of deratisation and exemption from deratisation granted under the International Sanitary Convention, the transport of live fish for human food, smoke abatement, and the discharge of sewage from ships into docks and enclosed harbours.

MEDICAL NEWS

University of Cambridge

On June 10th the degree of B.Chir. was conferred (by proxy) on G. H. A. Graetz.

Royal College of Surgeons of England

A meeting of the Council was held on June 9th, with Lord Moynihan, the president, in the chair. Lord Dawson of Penn, president of the Royal College of Physicians of London, was introduced, and admitted an honorary Fellow of the College.

Diplomas of Fellowship were granted to the following candidates who were successful at the recent examination :—

Philip Rowland Allison, M.B. Leeds, Guy's; Frederic Herbert Bentley, M.B. Manch., Guy's; Francis Arthur d'Abreu, B.M. Birm., St. Bart.'s; Robert Saunders de Bruyn, L.R.C.P., Guy's; Charles Leslie Swinnerton Duke, M.B. Sydney, St. Bart.'s; Maxwell Philip Ellis, M.D. Lond., Univ. Coll.; William John Ferguson, M.B. Lond., Guy's; Robert Allen Fitzsimons, M.B. Lond., Charing Cross; Botelego Marcus Fonseca, M.B. Lond., Birm. & Univ. Coll.; Philip Edward Glynn, L.R.C.P., Leeds & St. Bart.'s; Francis John Hector, M.D. Bristol; Franz Konrad Saddler Hirschfeld, L.R.C.P., Oxford & London; Reginald Keene, M.B. Lond., St. Bart.'s; Gopal Shankar Kelkar, M.B. Bombay, London; Hasan Yusuf Khwaja, M.B. Bombay, London & Guy's; Maurice Basil Lavery, M.B. Belf., Birm.; Maurice Lee, M.B. Durh.; Oswald Vaughan Lloyd-Davies, M.B. Lond., Middlesex; David Lurie, B.M. Oxf., London & Guy's; Thomas Keith Selfe Lyle, M.R.C.P., Camb. & King's Coll.; Archibald Hector McIndoe, M.B. N.Z., Otago & St. Bart.'s; Wylie McKissock, M.B. Lond., St. George's; Joseph Mintzman, L.R.C.P., Middx., Lond., & Guy's; John Havelock North, M.B. N.Z., Otago & St. Bart.'s; Gangadhar Martand Phadke, M.B. Lond., Univ. Coll.; Ralph Francis Phillips, M.B. Lond., St. Bart.'s; James George Reid, L.R.C.P., Oxf. & St. George's; Arthur Haden Richardson, M.B. Birm., London; Nicholas Harold Lloyd Ridley, M.B. Camb., St. Thomas's & Lond.; James Sloan Mutrie Robertson M.B. Glas., St. Bart.'s; Enid Helen Rockstro, M.B. Lond., Univ. Coll. & Guy's; Muhammad Abdul Hameed Siddiqi, M.B. Lucknow, St. Bart.'s & Lond.; Charles Gordon Sinclair, M.B. Lond., St. Bart.'s; Melvill Digby Sheppard, M.B. Lond., Univ. Coll.; George John Sophian, M.R.C.P., St. Bart.'s & St. Mary; Denis James Ross Steen, L.R.C.P., Camb. & St. Thomas's; William Harry Tandy, L.R.C.P., Birm. & St. Bart.'s; Vernon Cecil Thompson, L.R.C.P., Cardiff & St. Bart.'s; Gordon Oxburgh Tippett, M.B. Lond., St. Thomas's; James Whillis, M.D. Durh.; Joseph Mendel Yoffey, M.D. Manch., Cardiff.

Diplomas of Membership were granted to Henry Barcroft (Camb. and St. Mary's) and Abdul Rashid (Punjab), and the Licence in Dental Surgery to Albert Brooke Bateman (Adelaide and Liverpool).

The following were elected examiners for the ensuing year :—

Dental Surgery.—Surgical section: Mr. H. S. Clogg, Mr. L. Bathe Rawling, Mr. Russell Howard, Mr. Gwynne Williams, Mr. C. E. Shattock, and Mr. C. P. G. Wakeley.

Primary Fellowship.—Anatomy: Mr. P. N. B. Odgers, Prof. William Wright, Prof. J. E. S. Frazer, and Mr. Basil Hume. Physiology: Prof. John Mellanby, Prof. G. A. Buckmaster, Dr. D. H. de Souza, and Prof. Samson Wright.

Diplomas of L.R.C.P., M.R.C.S.—Elementary Biology: Mr. T. J. Evans, Mr. G. P. Mudge, Mr. C. C. Hentschel, and Mr. A. J. Grove. Anatomy: Prof. R. B. Green, Prof. W. E. Le Gros Clark, Prof. H. A. Harris, Prof. E. B. Verney, and Prof. Hamilton Hartridge. Pathology: Prof. William Bulloch, Mr. C. H. Fagge, Dr. R. G. Canti, and Mr. C. E. Shattock. Midwifery: Mr. A. W. Bourne, Mr. Sidney Forsdike, Mr. L. Carnac Rivett, and Mr. Malcolm Donaldson.

Diploma in Public Health.—Part I.: Prof. J. W. H. Eyre. Part II.: Dr. James Fenton.

Diploma in Tropical Medicine and Hygiene.—Major-General D. S. Harvey and Dr. G. Carmichael Low.

Diploma in Ophthalmic Medicine and Surgery.—Part I.: Mr. W. S. Duke-Elder and Mr. Charles Goulden. Part II.: Mr. Affleck Greeves.

Diploma in Psychological Medicine.—Dr. J. Godwin Greenfield.

Diploma in Laryngology and Otology.—Part I.: Mr. Norman Patterson and Mr. E. Musgrave Woodman. Part II.: Mr. Walter Howarth.

Diploma in Gynæcology and Obstetrics.—Mr. J. D. Barris.

Diploma in Medical Radiology.—Part I.: Prof. Woodburn Morison. Part II.: Dr. Douglas Webster.

National University of Ireland

University College, Cork.—At recent examinations the following candidates were successful :—

M.D.

In psychological medicine.—P. J. Courtney.

M.CH.

Edmond Bourke.

M.A.O.

Edmond Donovan.

M.B., B.CH., & B.A.O.

T. A. Kelly (with second-class honours), D. J. Barry, S. T. Cuddigan, R. J. S. Doherty, R. A. Good, M. S. O'Callaghan, W. F. O'Connell, J. A. O'Driscoll, and Mary O'Mahony.

D.P.H.

Part II.—T. A. Neville.

University of Oxford

Under the will of Mrs. Jackson, wife of a former rector of Exeter College, property has been left to the college which will partly be used for the foundation of a medical fellowship.

C. R. Green has been elected to the Schorstein Research Fellowship in medical science for two years.

University of Bristol

A dissertation by Percy Phillips has been approved for the degree of M.D. At recent examinations the following candidates were successful :—

FINAL EXAMINATION FOR M.B., CH.B.

Part I.—Margaret A. W. Hawkes and A. V. House.

Part II.—A. L. Eyre-Brook (first-class honours), O. E. L. Sampson (second-class honours), K. P. Beaubrum, G. T. Bevir, R. G. C. G. Carlson, A. McD. Davies, H. F. M. Finzel, F. E. Fletcher, J. R. Gibbs, and Frances N. Salisbury.

FINAL EXAMINATION FOR L.D.S.

Helena C. L. Blinkworth and W. V. Whiteford.

London Hospital Medical College

A course of lectures by Dr. J. R. Marrack, on the Structure of Molecules in Relation to Biology and Medicine, is now in progress at the college. They are given at 5.15 P.M. on Tuesdays and Thursdays, and are open to students and members of the medical profession.

On Friday, June 24th, at 3 P.M., Sir William Goschen will distribute the prizes of the past academic year.

Fripp Fellowship in Child Psychology

Applications are invited for the Sir Alfred Fripp Fellowship in Child Psychology, which is of the value of £300 per annum, and is tenable for two years. The investigations undertaken by the Fellow will be carried out in the children's department of Guy's Hospital, London. Further particulars may be found in our advertisement columns.

Donations and Bequests

The late Mrs. Beatrice Emily Smythe, among other bequests, left £1000 to the Elizabeth Garrett Anderson Hospital; £250 to the Children's Hospital, Halifax, Nova Scotia; £1000 to the League of Mercy; £500 to the Lady Chichester Hospital, Hove; and £500 to the Chelsea Hospital for Women.

Scottish Hospitals Liaison Committee

The Secretary of State for Scotland has reconstituted the Central Liaison Committee for Voluntary Hospitals in Scotland for the period to March 31st, 1935. The purpose of the Committee is to "act in liaison between the Department of Health for Scotland and the regional committees of voluntary hospitals in Scotland, to assist in keeping the Department in touch with voluntary hospital opinion, and, in the development of hospital services in Scotland, to foster coöperation between the voluntary hospitals and the local authorities in each region." The members are Lord Mackenzie (chairman); Sir David Wallace, F.R.C.S.; Mr. C. F. Henderson; Sir Alexander MacEwen; Sir James Macfarlane; Colonel D. J. Mackintosh, M.B.; and Major-General James Thomson, M.B. The secretary is Mr. Niven F. M'Nicoll, of the Department of Health for Scotland.

European Committee for Mental Hygiene

Following on the first International Mental Hygiene Conference, held at Washington in May, 1930, Mr. Clifford Beers, the founder and secretary-general, met some 50 European representatives at the Union Interalliée in Paris on May 29th to initiate preparations for a second congress to be held in Paris in 1935, and to assist in constituting the European Committee for Mental Hygiene. The delegates from England were Mr. L. G. Brock (chairman of the Board of Control), Sir Hubert Bond (senior commissioner), Dr. R. D. Gillespie and Dr. Doris Odlum (joint hon. secretaries of the British Council for Mental Hygiene), and Dr. J. R. Rees (hon. deputy director of the Institute for Mental Psychology, Tavistock-square). The business meetings were followed by scientific sessions held at the psychopathic hospital Henri Rousselle at the invitation of Prof. Toulouse. The subjects included discussions (1) on a report by Prof. Rüdin (Berlin) on the place of eugenics in preventive mental hygiene; (2) on the facilities available in Europe for the treatment of mental disorder without legal formalities; (3) on international unification of statistics in relation to mental disease. A second European reunion is to be held in Rome in September, 1933, by invitation of the Italian representatives. Sir Hubert Bond was appointed British representative on the European executive and Dr. Gillespie the British corresponding member of the European council. Prof. Toulouse was elected president of the 1935 congress with Dr. Genil Perrin as hon. secretary.

University of Birmingham

Mr. William Gemmill, hon. surgeon to the Queen's Hospital, Birmingham, has been appointed joint professor of surgery in place of the late Prof. William Billington.

Harveian Society of London

The Buckston Browne dinner of this society was held at the Connaught Rooms, London, on June 9th, the president of the society, Mr. Cecil P. G. Wakeley, being in the chair. After the loyal toasts, prosperity to the Harveian Society was proposed by Lord Riddell in an amusing speech in which, while he certainly regarded the great Harvey from a new angle, he showed himself quite familiar with the significance of Harvey's discoveries. Speaking as president of the Medico-Legal Society, Lord Riddell said that he desired to show his practical interest in the prosperity of a sister association by instituting a permanent memorial to the signal generosity of Sir George Buckston Browne in connexion with the Harveian Society. He therefore proposed, he said, to present to the Society a loving-cup which should bear an inscription recording the association of the gift with Buckston Browne.

The President, in reply, explained that the annual Buckston Browne dinner, and the Harveian prize and medal, were given by Sir Buckston in memory of his gallant and only son, Lieut.-Colonel George Buckston Browne, who fell in the Great War. He referred to the pleasure which he, and all the members of the Society, had felt in Sir Buckston's knighthood, recalling that they had heard from him, 30 years ago, one of the finest of their series of Harveian lectures entitled "Twenty-five Years of Urinary Surgery in England." Referring to the centenary celebrations of last year, the president reminded the society of their visit to Hempstead Church, Harvey's burial place, when a silver patten was presented to the church by the Society, which also undertook to rehang the bells when the tower was re-erected by the Royal College of Physicians of London. The sum required for that purpose he said was £490, of which £210 had been received, while Dr. Turtle, the treasurer of the Society, would be pleased to receive subscriptions. Mr. Wakeley concluded by suggesting that the loving-cup, which Lord Riddell was presenting, should bear the three names of Harvey, Buckston Browne, and Riddell.

The toast of the Visitors was then proposed by Dr. A. H. Douthwaite, who coupled with it the names of Prof. William Wright, president of the Anatomical Society of Great Britain and Ireland, and Prof. Allen Mawer, provost of University College, London.

Prof. William Wright, in reply, said that it would not be inappropriate to the occasion to add something to the personal history of Harvey. Sir D'Arcy Power's biography, he said, stated that when Harvey's resting-place at Hempstead was first visited by the late Sir Benjamin Ward Richardson in 1847, the lead in which the remains were lapped was already corroded—the result being a rent through which on one occasion a frog jumped out, and from which a thick, dirty fluid oozed. Richardson was anxious to know whether there were still any of the mortal remains of Harvey within, and on a further visit to Hempstead, accompanied by, among others, Sir George Paget, representing Harvey's old college, Caius, he took with him a small mirror, a magnesium light, and other appliances. Paget narrated the sequel to the late Sir William Ridgeway, who was Prof. Wright's informant. It was now found that in the interval, owing to a further collapse of the lead, the rent was almost closed. The party shrank from opening the case and viewing the great discoverer "clothed with all the dishonours of corruption," but yet felt it incumbent upon them to settle whether any of the remains were present or not. At this juncture Richardson took his stick or umbrella firmly in his hand, pushed it through the rent and, moving it up and down, met such obstruction as to convince himself and the other members of the party that no inconsiderable part of the former Warden of Merton was still there. The incident, said Prof. Wright, had, probably for reasons of delicacy, up till now been almost universally suppressed, but he felt no apology was needed for telling the story and relieving the necrolater visiting Hempstead of any dubiety as to the contents of the shrine. This he found to be one more example of the strange tricks which time and fate play with our relics. "Could there be," he asked, "any sharper contrast than that between the fate of Harvey's material remains and his great and glorious spiritual legacy?"

Prof. Mawer also replied.

The guests were numerous and representative, and included the Directors-General of the Navy, Army, and Royal Air Forces, Sir Peter Chalmers Mitchell, Prof. W. R. Halliday, the presidents of the College of Obstetrics and Gynæcology, the Royal Society of Medicine, the Medical Society of London, the Hunterian Society, the Listerian Society, and the Chelsea Clinical Society.

Dr. Jessie MacGregor Prize, Edinburgh

This prize for the present triennial period has been divided equally between Miss Elsie Porter, M.D. Edin., for her work on the therapeutic uses of drugs of the digitalis group, and Miss Helen May Russell, M.D., F.R.C.P. Edin., for her work on human and experimental relapsing fever. The prize is awarded for original observations by a woman who has qualified in medicine from Edinburgh.

Medical Diary

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.
TUESDAY, June 21st.—5.30 P.M., GENERAL MEETING OF FELLOWS. Ballot for election to the Fellowship.
THURSDAY.—2 to 5.30 P.M., UROLOGY. Exhibition of instruments. 5.30 P.M., Sir John Thomson-Walker: Some Changes and Problems in Urology.
SATURDAY.—DISEASE IN CHILDREN. Annual Provincial Meeting at Alton.

MEDICO-LEGAL SOCIETY.
THURSDAY, June 23rd.—8 P.M. (at 11, Chandos-street, Cavendish-square, W.), Mr. Alexander Paterson: Should the Criminologist be Encouraged? To be followed by a discussion.

ST. JOHN'S HOSPITAL DERMATOLOGICAL SOCIETY, 49, Leicester-square, W.C.
WEDNESDAY, June 22nd.—5.30 P.M., Sir Thomas Lewis: Recent Observations on the Causation of Raynaud's Disease. (Annual Oration).

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.
MONDAY, June 20th to SATURDAY, June 25th.—PRINCE OF WALES'S HOSPITAL, Tottenham, N. Post-graduate course in general medicine, surgery, and the specialties. All day. Specially suitable for general practitioners.—ROYAL FREE HOSPITAL, Gray's Inn-road, W.C. Ante-natal demonstration by Prof. McIlroy. Wed., 5 P.M. (These courses are open only to Members of the Fellowship of Medicine.)

ST. PAUL'S HOSPITAL, Endell-street, W.C.
WEDNESDAY, June 22nd.—4.30 P.M., Mr. C. H. Mills: Some Interesting Urological Cases, with demonstrations, specimens, and radiograms.

NATIONAL HOSPITAL, Queen-square, W.C.
MONDAY, June 20th.—2 P.M., Dr. Riddoch: Out-patient Clinic. 3.30 P.M., Dr. Symonds: Head Injuries.
TUESDAY.—2 P.M., Dr. Walshe: Out-patient Clinic. 3.30 P.M., Dr. Collier: Cerebral Tumours, their Symptoms and Localisation.
WEDNESDAY.—2 P.M., Dr. Martin: Out-patient Clinic.
THURSDAY.—2 P.M., Dr. Kinnier Wilson: Out-patient Clinic. 3.30 P.M., Dr. Gordon Holmes: Pituitary Tumours.
FRIDAY.—2 P.M., Dr. Adie: Out-Patient Clinic. 3.30 P.M., Dr. Symonds: Head Injuries.

ST. MARK'S HOSPITAL, City-road, E.C.
THURSDAY, June 23rd.—4.30 P.M., Dr. J. K. Hasler: Methods of Anæsthesia in Rectal Surgery.

LONDON JEWISH HOSPITAL, Stepney Green, E.
THURSDAY, June 23rd.—4.15 P.M., Dr. D. Nabarro: Congenital Syphilis.

ST. PETER'S HOSPITAL, Henrietta-street, W.C.
WEDNESDAY, June 22nd.—3 P.M., Mr. J. Alban Andrews: Injuries of the Urethra and their Treatment.

SOUTH WEST LONDON POST-GRADUATE ASSOCIATION, St. James' Hospital, Balham, S.W.
WEDNESDAY, June 22nd.—4 P.M., Prof. E. C. Dodds: Biochemistry and the General Practitioner.

NATIONAL CENTRE AND POST-GRADUATE SCHOOL OF RADIOTHERAPY, Riding House-street, W.
WEDNESDAY, June 22nd.—4.30 P.M., Mr. Roy Ward: Diseases of the Skin.

ROYAL NORTHERN GROUP OF HOSPITALS.
WEDNESDAY, June 22nd.—3.15 P.M. (at Royal Chest Hospital, City-road), Dr. J. Maxwell: Lung Abscess.

Appointments

CAMERON, E. H., M.B., Ch.B. Edin., F.R.C.S. Edin., has been appointed Ophthalmic Surgeon to the Edinburgh Royal Infirmary.

King's College Hospital: LAWRENCE, R. D., M.D. Aberd., Junior Physician in charge of the Diabetic Department; CAWTHORNE, TERENCE, F.R.C.S. Eng., Junior Surgeon in Ear, Nose and Throat Department.

London County Council: B. E. MOSS, M.B., B.S. Lond., Temporary visiting medical officer, Edmonton Colony.

Certifying Surgeons under the Factory and Workshop Acts: DAVIES, D. H., L.R.C.P. Lond., M.R.C.S. (Rhondda, Porth, Glam.); HADFIELD, R. H., L.R.C.P. Lond., M.R.C.S. (St. Just, Cornwall); PETTIGREW, F., M.B., Ch.B. Glasg. (Wartle, Aberdeen); SANDERSON, R. (Uffculme, Devon); and WOOD, S., L.R.C.P. Lond., M.R.C.S. (Burnley, Lancs.).

Vacancies

For further information refer to the advertisement columns.

Aberdeen Royal Infirmary.—Asst. M.O. for Radium Department.
Accrington, Victoria Hospital.—H.S. £150.
All Saints' Hospital for Genito-Urinary Diseases, Austral-street, West-square, S.E.—Two Hon. Anæsthetists.
Altrincham General Hospital.—Sen. and Jun. H.S. At rate of £150 and £120 respectively.
Banbury, Horton General Hospital.—Res. M.O. At rate of £150.
Bedford County Hospital.—Second H.S. At rate of £140.
Birkenhead County Borough.—Res. Asst. M.O. £350.
Birmingham, Erdington House.—Additional Asst. M.O. £650.
Blackburn Royal Infirmary.—Fourth H.S. £150.
Brighton, Royal Alexandra Hospital for Sick Children.—H.S. At rate of £100.
Bristol General Hospital.—Sen. Res. M.O. £200.
British Empire Cancer Campaign, 12, Grosvenor-crescent, S.W.—William Morris Research Fellowship in Radiology. £500–£1000.
Burnley, Victoria Hospital.—H.P. and H.S. Each at rate of £150.
Buxton, Devonshire Hospital.—Asst. H.P. and H.S. Each at rate of £150.
Cambridge, Addenbrooke's Hospital.—Res. Anæsthetist and Emergency Officer. At rate of £130.
Canterbury, Kent and Canterbury Hospital.—H.S. At rate of £125.
Cardiff, King Edward VII. Welsh National Memorial Assoc.—Area Asst. Tuberculosis Phys. £500.
Cardiff Royal Infirmary and City County Council.—Hon. Phys. and Visiting Phys. to Dept. of Children's Diseases. £100. Also Lecturer in Children's Diseases at Welsh National School of Medicine. £50.
Carlisle, Cumberland Infirmary.—Second H.S. £155.
Chorley Borough.—M.O.H. and School M.O. £800.
Chester, East Lancashire Tuberculosis Colony, Barrowmore Hall, Gt. Barrow.—H.P. At rate of £100.
Colchester, Essex County Hospital.—H.P. Also Asst. H.S. £150 and £100 respectively.
Derby.—Locum Res. Asst. M.O. for Walton Sanatorium, near Chesterfield. At rate of £350.
Dewsbury and District General Infirmary.—Second H.S. £150.
Evelina Hospital for Sick Children, Southwark, S.E.—Hon. Phys. to Out-patients.
Freemasons Hospital and Nursing Home, 237, Fulham-road, Chelsea, S.W.—Res. M.O. At rate of £250.
Gloucester, Gloucestershire Royal Infirmary and Eye Institution.—Second H.S. At rate of £120.
Guy's Hospital.—Sir Alfred Fripp Memorial Fellowship in Child Psychology. £300.
Hospital of St. John and St. Elizabeth, 60, Grove End Road, N.W.—Res. H.P. At rate of £100.
Huddersfield Royal Infirmary.—Cas. O. and Two H.S's. £225 and £150 respectively.
Hull Royal Infirmary.—H.P. at Sutton Branch Hospital. At rate of £160.
Ilford, King George Hospital.—H.S. At rate of £100.
Indian Medical Service.—Appointments Commission.
King Edward Memorial Hospital, Ealing.—Sen. Res. M.O. £250.
Lancaster County Mental Hospital.—Asst. M.O. £500.
Leicester Royal Infirmary.—Hon. Orthopædic Surg.
Lewisham Hospital, High-street, Lewisham, S.E.—H.P. At rate of £80.
Lincoln, Bracebridge Mental Hospital.—Second Asst. M.O. £425.
Liverpool, Alder Hey Children's Hospital.—Med. Supt. £1000.
Liverpool, Royal Children's Hospital.—Hon. Phys.
Liverpool, St. Paul's Eye Hospital.—H.S. At rate of £145.
London Clinic and Nursing Home Ltd, 20, Devonshire-place, W.—Res. M.O. At rate of £200.
London Light and Electrical Clinic, 42, Ranelagh-road, S.W.—Hon. Visiting Anæs. and Two Hon. Visiting Phys.
London Lock Hospital, 91, Dean-street, W.—H.S. to Male Lock Hospital. At rate of £175. Also Surg. Reg. At rate of £100.
London University.—Examinerships.
Llanelly and District Workmen's Medical Committee.—Surg. for Ear, Nose and Throat Dept.
Manchester, Ancoats Hospital.—H.P. At rate of £100.
Manchester Royal Infirmary.—Hon. Asst. Phys. Also Hon. Orthopædic Surgeon.
Middlesbrough, North Ormesby Hospital.—H.P. and H.S. At rate of £120 and £135 respectively.
Miller General Hospital, Greenwich-road, S.E.—Out-patient Officer. At rate of £150.
Norfolk County Council.—Temporary Asst. M.O. 10 guineas weekly.
North Western Fever Hospital, Lawn-road, Hampstead, N.W.—H.P. At rate of £80.
Norwich, Norfolk and Norwich Hospital.—H.S. to Special Depts. £120.
Nottingham General Hospital.—H.S. At rate of £150.
Oldham Royal Infirmary.—H.S. Also Cas. O. and H.P. Each at rate of £175.
Plymouth, Central Hospital.—Res. H.S. At rate of £150.
Princess Beatrice Hospital, Richmond-road, Earl's Court, S.W.—Cas. O. and H.P. £100.
Queen's Hospital for Children, Hackney-road, E.—H.S., H.P., and Cas. O. Each at rate of £100. Also Ophth. Surg.
Queen Mary's Hospital for the East End, E.—H.S. At rate of £120.
Reading, Royal Berkshire Hospital.—H.S. £150.
Redhill, Surrey, Royal Earlswood Institution.—Jun. Asst. M.O. At rate of £250.
Royal Army Medical Corps.—25 Permanent Commissions.
Royal College of Physicians, Pall Mall, S.W.—Two Leverhulme Research Scholarships. Each £500.
Royal Free Hospital, Grays Inn road, W.C.—Res. Unit Anæs. £150. Also Clin. Assistantships in Special Depts.
Royal National Orthopædic Hospital, 234, Gt. Portland-street, W.—H.S. for Country Branch, Brockley Hill, Stanmore. At rate of £150.
Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.—H.P. At rate of £100.
St. Mary Abbots Hospital, Marloes-road, W.—Res. Med. Supt. £1100.
St. Mary's Hospital for Women and Children, Plaistow, E.—Clin. Asst.
Salford Royal Hospital.—Cas. H.S.
Salisbury General Infirmary.—Two H.S's. Each £150.
Sheffield Children's Hospital,—Res. M.O. £175. Also H.P. and H.S. Each at rate of £100.
South London Hospital for Women, Clapham Common, S.W.—H.S. At rate of £100.
Southampton Children's Hospital and Dispensary for Women.—Res. M.O. At rate of £100.
Southampton, Royal South Hants and Southampton Hospital.—H.P. Two H.S's. and Cas. O. Each at rate of £150.
Stirling District Mental Hospital, Larbert.—Third Asst. M.O. £250.
Stockport Infirmary.—Jun. Res. Surg. £150.
Stoke-on-Trent, North Staffordshire Royal Infirmary.—Orthopædic H.S. £150. Also Asst. H.P. £125.
Tunbridge Wells and Counties General Hospital.—H.S. £160.
Walsall General Hospital.—H.S. At rate of £150.
West Bromwich, Hallam Hospital.—Sen. Res. M.O. £350. Also Two Res. H.P.'s. Each £200.
West Riding of Yorkshire County Council.—School Med. Inspector. £500.
West Suffolk County Council.—Asst. County M.O. and Asst. School M.O. £500.
Winchester, Royal Hampshire County Hospital.—H.S. At rate of £125.
Woolwich and District War Memorial Hospital, Shooters Hill, S.E.—H.P. and H.S. Each at rate of £100.

The Chief Inspector of Factories announces vacancies for Certifying Factory Surgeons at Stow (Mid Lothian), Stromness (Orkney), and Bathgate (West Lothian).

The Home Secretary gives notice of a vacancy for a Medical Referee under the Workmen's Compensation Act for the Aylesbury and High Wycombe and Chesham County Court districts. Applications for the post should reach the Private Secretary, Home Office, Whitehall, London, S.W. not later than July 2nd.

Births, Marriages, and Deaths

BIRTHS.

BARNSLEY.—On June 7th, at Ellesmere, Salop, the wife of Dr. Arnold Barnsley (late of Singapore), of a daughter.
BOWERS.—On June 11th, at Woodlands, Overstone Park, Northampton, the wife of Captain G. P. Farmar Bowers, I.M.S., of a daughter.

MARRIAGES.

ANDREWS—HENDERSON.—On June 1st, at Victoria Memorial Hall, Belfast, Charles T. Andrews, M.D., M.R.C.P., to Mabel L. V. Henderson, M.B., B.Ch.
COOKSON—MITCHELL.—On June 2nd, at St. Matthew's, Bayswater, Harold Cookson, M.D., to Elizabeth Mary, daughter of the late William Roger Mitchell and of Mrs. Mitchell, of West Kensington Mansions, W.

DEATHS.

BANNERMAN.—On June 10th, at St. Andrews-street, Cambridge, William Bannerman, M.B., C.M. Edin.
HARVEY.—On June 10th, at a nursing home in London, Charles Edward McNiel Harvey, M.B. Edin., M.R.C.S., L.R.C.P. Lond., of Beckford Lodge, Sar-la-Mar, Jamaica, aged 66.
MURRAY.—On June 11th, Herbert Leith Murray, Rodney-street, Liverpool, aged 52.
SEAMAN.—On June 12th, at Fernside, Hollington Park, St. Leonards-on-Sea, Albert Baird Seaman, Brig.-Surgeon Lt.-Colonel, I.M.S. (retired), aged 89.
SMITH.—On June 4th, Hugh Smith, L.R.C.S., L.S.A., R.A.M.C., J.P., of Dixons Green, Dudley, aged 56.
STEELE-PERKINS.—On June 9th, suddenly, George Steele-Perkins, M.D., of The Arts Club, Dover-street, W., and of Kingsdown, near Deal, aged 75 years.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

SALE OF SAUNDERTON SANATORIUM.—Saunderton Sanatorium, near High Wycombe, has been sold by the governors of the City of London Hospital for Diseases of the Heart and Lungs to the Buckinghamshire county council for use as an isolation hospital. The hospital cannot continue to afford the expense of maintaining an independent country establishment, and patients will in the future be sent from London to various convalescent homes by arrangement with the almoner.

NOTES, COMMENTS, AND ABSTRACTS

THE FIRST INTERNATIONAL CONGRESS ON ASTHMA

(FROM A CORRESPONDENT)

WITHIN the last few years research on asthma has received increasing attention throughout the world, and nowhere more than in England and Scotland since the formation of the Asthma Research Council five years ago. The time is fitting therefore for an international congress, and the meeting on June 4th–5th was successful not only because it set out divers views and interests, but also because it gave individual workers a chance of discussing problems with one another. Probably no better place could have been chosen than Mont Dore, "Providence des asthmatiques," whose associations with asthma date back even to Roman times.

The Scientific Sessions

The congress was held under the presidency of Prof. Fernand Bezançon, of Paris, and was attended by about 400 visitors, many of the medical men being accompanied by their wives and families. In his opening address Prof. Bezançon dealt with the Evolution of our Knowledge of Asthma, discussing the various ætiological theories that have held sway, and drawing particular attention to the pioneer researches of Widal and his co-workers.

The *nervous element* in asthma was discussed by Prof. P. L. Abrami and Dr. E. Bernard (Paris) and Prof. R. J. S. McDowall (London). Whilst the former speakers dealt with the production of bronchospasm through nervous channels either reflexly or through psychic stimuli, Prof. McDowall drew attention to the local production of bronchospasm through a liberation of histamine in the bronchi by numerous strains of gram-negative bacilli which Dr. F. A. Knott has described. Two interesting communications dealing with this aspect deserve mention. Dr. P. Dodel (Clermont-Ferrand) described the experimental production of asthmatic dyspnœa in animals by provoking a bronchitis with chlorine and then giving infinitesimal doses of pilocarpine which were without effect on normal animals. In its clinical application such work bears out the oft-observed fact that asthma has frequently followed lung affections and gassing during the war. Dr. J. André (Mont Dore) described some high creatinine values in the blood during attacks, and suggested creatinine estimations as a chemical test of the vagosympathetic tone in asthma, high values occurring with a state of vagotonia, low values with sympatheticotonia.

The rôle of *anaphylaxis and allergy* in the ætiology of asthma was ably discussed by Prof. Pasteur Vallery-Radot (Paris), who concluded that all asthma was not anaphylactic. Prof. C. Frugoni (Padua) described the production of asthma in normal children by the transference of blood from asthmatic sufferers. Prof. Storm van Leeuwen (Leyden) gave an interesting account of the various factors of soil and climate as they affect asthma in Holland, and of his methods of removing these "climate-allergens" by the use of allergen-proof chambers.

Local factors in the bronchi and nose, such as hypertrophy and infection, were dealt with by Dr. Haibe (Namur) and Prof. E. Halphen and Dr. H. Bourgeois (Paris). The indications for surgical intervention and the therapeutic value of vaccines were discussed, but the end-results of either were not very convincing. Dr. R. Leroux (Paris) described the characteristic formation of polypi in the nose and antra, and Dr. Bloch (Paris) the histological structure of these polyps, which included eosinophils and Charcot-Leyden crystals.

The importance of the study of asthma in *infancy and childhood* was stressed in the reports of Drs. Lesneé and G. Dreyfus-Sée (Paris) and Dr. Péhu (Lyons). The ætiology, symptoms, diagnosis, and treatment were discussed in full, and tallied largely with observations that have already been published in England. With regard to treatment, the children in France appear to get much more injection-therapy (specific allergens, vaccines, blood, milk or peptone) than seems necessary in England.

Hepatic insufficiency and *endocrine dysfunction* were suggested as important ætiological factors in asthma by Prof. V. Cordier (Lyons) and Dr. Léopold Lévi (Paris), whilst Dr. A. Schlemmer (Mont Dore) described the liver as being enlarged and tender to palpation in over half the cases he had seen. Though a large number of suggestions were made as to what function of the liver was at fault, and how it produced the asthmatic state, no conclusive proof was presented by liver function tests or controlled dietetic regulations of hepatic insufficiency. Most of the discussion on endocrines concerned the thyroid gland, since its function could be estimated by studies of the basal metabolism. Hypothyroidism was present much more frequently than hyperthyroidism, though both could be associated with the asthmatic state.

Probably one of the most interesting subdivisions for discussion was that of the *biochemical basis of asthma* and other allergic conditions, which was opened by Dr. G. H. Oriel (London). Dr. Epstein (Geneva) gave a very interesting communication on acid-base disequilibrium in asthma, and Dr. F. T. Harrington (Newcastle) discussed the important part played by the stomach, dyspepsia being a constant symptom in the majority of asthmatics. Dr. George Bray (London) outlined the importance of the hereditary factor in allergic conditions; it could be elicited, he said, in two-thirds of all cases, which no treatment known at present appeared to influence. Dr. Jacquelin (Paris) discussed the relative incidence of other allergic conditions in asthmatic patients and their families.

The last session dealt solely with *treatment*. Dr. E Joltrain (Paris) dealt with the general treatment of the asthmatic attack, whilst Dr. de Gennes (Paris) spoke on the treatment of the asthmatic individual. The subject was dealt with rather in text-book fashion in the opening papers, but the smaller communications were of great interest. Dr. Epstein (Geneva) dealt with attempts to treat the asthmatic by modifying his acid-base equilibrium towards the acid side; Dr. Brabant (Brussels) described a method of treating asthma by shock, and Dr. Pepère (Mont Dore) by blood-letting. Physical treatment by radiotherapy and actinotherapy seems to play a more important part in the treatment of asthma in France than elsewhere.

Treatment at Mont Dore.

Of great interest to the visitors was the account of the principles of treatment and the action of the waters of Mont Dore, given by the local physicians, Drs. Galup, Robert, and Bouchon. They restrict themselves to the therapeutic use of the waters and gases which are peculiar to the place, and do not, as a general rule, advocate treatment that can be obtained elsewhere. The visitors were conducted over the thermal establishment each morning in small groups by the various doctors of the station, and the various methods of "taking the waters" were described and seen. The waters are warm and quite pleasant to the taste, and the free gas is mildly stimulating to the nasal mucous membrane. They contain carbonic and hydrochloric acids in solution, with traces of silica, arsenic, and other metals. Ten to twenty minutes in the inhalation chambers leads to intense peripheral vasodilatation, and later to relief of an impending attack. The patients stated that inhalation was far superior to drinks or douches of the water, whilst nasal complaints were greatly alleviated by the nasal inhalation of the pure gas.

The English visitors included Prof. McDowall and Drs. Oriel and Bray (London), Dr. Harrington

(Newcastle), and Dr. H. H. Moll (Leeds). It was unfortunate that the German, Argentine, Spanish, American, and Rumanian representatives, after forwarding their contributions, were at the last moment unable to attend. All the opening papers were collected into book form in French before the congress, and may be obtained from Masson et Cie, Libraires de l'Académie de Médecine, 120, Boulevard Saint-Germain, Paris. The numerous interesting communications and discussions will be printed in a companion volume at a later date.

The social arrangements were excellent, and the physicians and the municipality of Mont Dore are to be congratulated on their organisation, munificence, and zeal.

IN DEFENCE OF EXPERIMENTAL RESEARCH

DURING the last few weeks two spirited attacks on those who would impede the progress of medicine have been delivered. Lord Moynihan, in an appendix to the Romanes lecture delivered in the Sheldonian Theatre at Oxford on June 1st, which has since been published in pamphlet form,[1] set out his position in the following words :—

"Here let me frankly face criticism that has been directed against the methods of our laboratories, and has resulted in a most lamentable impediment to the advance of medicine. Without experiment on living animals, that advance, already greatly hampered, cannot continue. I recognise and endeavour to understand the motives which animate powerful bodies of noble and highly gifted men and women who are opposed to experimental methods. No right-minded man ever wishes to inflict suffering upon man or animal. That is abhorrent to us all. Opposition to animal research, I firmly believe, is based upon lack of appreciation and understanding; as it is certainly supported by grievous and, I think, unpardonable misstatement. Day by day for many a year it has been my happy duty to operate on men, women, and children who now number a goodly company, in order to save life or bring relief. My heart is full of compassion. I cannot bear to cause or even to hear of suffering. Every one who has experience of laboratory work knows how little pain is inflicted, and what steps are always taken to minimise or abolish it. Yet the slight distress we must occasionally impose in our work upon man is greater in intensity, and far more protracted, than any suffered in our laboratories. It is simply not the truth to say that pain is wantonly, or unavoidably, inflicted there. The experimenter who excites suffering defeats his own aims: for pain changes the issues he seeks to discover. Physiologists and surgeons are the most humane of men. The necessities of their work would impose this quality if it were not already possessed. The whole anti-vivisection campaign, though a great testimony to the tenderness of heart of its supporters, has no slightest foundation in truth, and is a witness to their shut-mindedness and credulity."

In the sixth Stephen Paget lecture given to the Research Defence Society at the London School of Hygiene and Tropical Medicine on June 15th, Sir Arthur Keith, F.R.S., emphasised

THE MODERN CONFLICT BETWEEN SENTIMENT AND REASON

He spoke of the contrast between physical experiments, which evoked an intellectual response, and physiological experiments in which hearts as well as heads were challenged. Not all kinds of living matter exercised this power. Botanists were untroubled thereby, but experiments on sentient animal matter evoked feeling in the experimenter as well as in the onlooker. Herein lay a critical difference between experimental physics and experimental biology. The physicist had to satisfy only a single or scientific ideal; the experimental biologist had to satisfy an ethical as well as a scientific standard. The conflict between sentiment and reason, as carried on to-day, found its sharpest expression in the opposition offered to the beneficial work carried on by experimental physiologists. The antivivisection crusade was only an acute manifestation of a conflict which permeated modern society—a conflict in which blind sentiment is ranged against clear reason. Minor manifestations of the same conflict were met in all departments of medicine. Every medical measure which aimed at an ultimate cure by the infliction of immediate suffering entailed a repression of feeling on the part of the prescribing physician. The judge on the bench had to divest himself of his natural instincts if he was to administer law to the criminal in the dock. The crowd, bemoaning the terrible end that awaited the man in the condemned cell forgot the justice due to the woman whom the criminal had widowed. No parent ever administered punishment to a child, however deserved and salutary the punishment might be, without a conflict between reason and sentiment. There was a growing feeling amongst teachers that physical punishment, administered to scholars, was an unjustifiable form of cruelty. Sentiment asserted itself more and more as a ruling force. The repugnance to eugenical measures of a surgical nature sprang from sentiment, not from reason. Amongst all highly civilised peoples there was a growing tendency for feelings to dominate reason and for sentiment to be accepted as a guide in life rather than intellect. These changes were vaunted as sure signs of human progress. If sentiment and feeling were to subjugate and enslave reason—as now they threatened to do—then the ultimate result for civilisation would be, not progress—but disaster. The conflict in which the members of the Research Defence Society were now engaged was not merely to vindicate the right of medical men to carry out inquiries which were lawful under the Act of 1876, but also to demand that in settling all issues relating to the life and death of a community reason as well as sentiment must have a say in the decision.

[1] Oxford: Clarendon Press. 1932. Pp. 64. 2s. 6d.

DRESS REFORM FOR THE MALE

AN association named the Men's Dress Reform Party has issued a notice, "to those whom it may concern," of a dinner, at which a debate on dress reform for men has been arranged. The dinner will take place at the May Fair Hotel, London, on Friday, June 24th, and early requests for tickets should, it is suggested, be made to Dr. A. C. Jordan, 82z, Portland-place, London, W., who is acting as honorary secretary. The price of tickets for men and women alike is 12s. 6d., exclusive of wine. The notice claims that the party will be "the sartorial event of the London season," and, with regard to the male attire thereat, we are informed that men may "adopt healthy and decorative styles in accordance with their fancies," while the less adventurous may appear in a dinner jacket. Dr. C. W. Saleeby will act as chairman of the ensuing debate, when a motion will be put forward by Mr. C. E. M. Joad and seconded by Dr. Haden Guest, that "Man must be Redressed." The motion will be opposed by Mr. D. Anthony Bradley, and it is hoped that among the leading speakers will be Canon Percy Dearmer and Mr. Ernest Thesiger.

JEAN ATHERTON

WE are informed that Jean Atherton, alias Mary Beale, alias Millicent Aldridge, was sentenced as "the most persistent begging-letter writer in the country" to 18 months' imprisonment at the recent London Sessions. We have made allusions in these columns to her methods, because, on the plea that she was the daughter of a "Dr. Thomas Beale," she made frequent appeals to the medical profession, who, therefore, might find a warning useful.

HOSPITAL FINANCES AT HASTINGS.—The Royal East Sussex Hospital is tackling its financial situation efficiently, and at the annual meeting it was stated that the excess of expenditure over income was only £992 as compared with £2414 the previous year. The average cost per week per patient fell to £2 17s. 2·28d. from £3 2s. 2·23d., while £549 was received in respect of street accidents, leaving a deficit of £904 to be found out of the hospital's ordinary income. Attendances of both in-patients and out-patients increased.